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²Results achieved by comparing recommended system to IBM System x3650 (with Xeon® E5205) using IBM Systems Consolidation Evaluation Tool (<https://roianalystalinean.com/stgi/>). The comparison is between IBM System x3650 M4 and x3650 (does not include x3650 M2 or x3650 M3).

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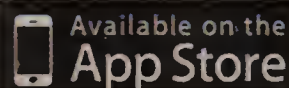
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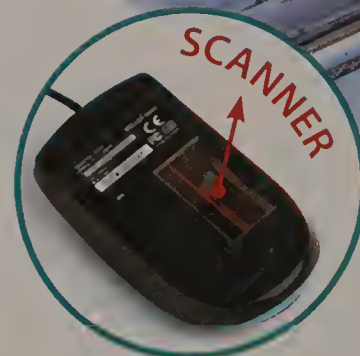
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BRAD CHACOS

PCs Aren't Dead, They're Microwaves

RECENT NEWS HASN'T been generous to PCs, especially after market research showed that shipments fell by double-digit percentages in the first quarter. Common wisdom declared that PCs are done. And yet PCs aren't dead—they're microwaves. But not for much longer.

The Push to Appliancehood

Until the early nineties, computers were a luxury. Today, however, everyone has a PC, just as everyone has a stove, a refrigerator, and a microwave. PCs have evolved into appliances—indispensable, yet unexciting. And a whole range of factors helped make this transition happen.

Economy: Consumers and companies alike are doling out their dollars with great caution. So the prospect of plopping down a few hundred dollars on a laptop simply isn't enticing, especially if your current PC still works well enough.

Technology: Improvements to computer performance have slowed to a near crawl over the past few years. Modern-day PC hardware lasts forever. If your current machine works fine and a new one won't give you much extra oomph, what's the point in upgrading?

Boredom: Manufacturers aren't helping their own cause, either. The race for ever-lower prices has resulted in the production of cookie-cutter computers. Is it any surprise that shoppers treat these units of nonbrilliance as appliances?

Mobile: Tablets will never replace PCs completely, considering computers' full-size keyboards, full-size screens, and beefy internals. But tablets don't have to. A lot of people don't need big keyboards or screens. And in many instances, a tablet offers most of the benefits of a laptop,

Pundits say that PCs are dead, but the truth is much more mundane: Computers have become commodity appliances.

at a fraction of its size and price. Tablets no doubt pilfer some sales from laptops, but more crucially, their arrival elongates people's overall replacement cycles for their PCs. In the old days, if your PC was your only computing device, you would replace it if it slowed to a crawl. But if you

Ditching appliance status also requires making massive leaps in computer performance. Fortunately, chip makers are retooling the design of CPUs and shifting workloads to graphics processors to push PCs to blistering new levels in coming years—and accompanying that great



have a tablet, squeezing just one more year out of your PC is a lot easier.

Windows 8: All of the criticism focused on the modern UI in Windows 8 could be pushing legions of would-be buyers into the "let's wait one more year" camp.

Beyond the Microwave

Changes now rocking the computing landscape may once again elevate the PC beyond mundane appliance status. And the revolution is coming courtesy of Microsoft's oft-cursed OS: Windows 8's touch-friendly possibilities have sparked a wave of hardware design innovation.

power will be great power efficiency, too.

Intel's Haswell processors and AMD's next-generation accelerated processing units are said to offer the PC performance we love, but with tablet-esque battery life. As PCs evolve, blurring the lines between laptops, tablets, and whatever Google Glass is, here's hoping that we'll soon be able to say that the PC is more than a mere appliance. ●

PCWorld Senior Writer Brad Chacos spends his days jamming to Spotify, digging through desktop PCs, and covering everything from BYOD tablets to DIY Tesla coils.

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Are “Do Not Track” laws the best answer to the numerous and growing threats to online privacy, as May’s *Editor’s Desk* suggested? Our readers gave varying responses to that question. Other articles also drew feedback, including hisses, cheers, and questions (answered). Write to letters@pcworld.com.



Online Privacy

Regarding Melissa Riofrio’s “Scary Times for Online Privacy” [*Editor’s Desk*, May]: Does anyone really believe a “Do Not Track” concept will work? Does anyone remember the “DoNotCall.gov” telephone privacy law? I don’t see where that law worked very well. I still get more than a half dozen solicitation calls a month, for credit cards, home security, and so on. I can’t even get the “DoNotCall.gov” site to help!

Big business will find a way to get around any “Do Not Track” policy.

*Dom Catarinichia
Hamilton, New Jersey*

Melissa Riofrio’s *Editor’s Desk* column in the May 2013 issue was spot-on. In addition, she could have mentioned that no one recently seems to have read George Orwell’s fundamental and entertaining books *Nineteen Eighty-Four* and *Animal Farm*—both are required reading on her theme of privacy and freedom.

Paul Larocque, Markham, Ontario

Everything Old Is New Again

Regarding “Changes in the Wind for Windows 9” [*Forward*, May]: Let me get this straight—Microsoft should ditch the keyboard, the mouse, and overlapping windows, so that people can get their greasy paws all over the screen? And who needs programs that actually do something when all that’s needed are Microsoft Store apps? Well, we don’t need a new Windows for that—let’s just tweak Windows 1.0. It was doing tiles and nonoverlapping windows quite well 25 years ago.

leaduc, PCWorld.com forums

Survival Kit Addition...

In May’s feature “Your Portable PC Survival Kit,” I was surprised to see that the venerable CCleaner utility did not make it onto the list of portable apps for PC emergencies. The developer, Piriform,

has a portable version for download (www.piriform.com/search?q=Builds).

Logan Arens, Commerce, Michigan

Editor’s response: You can also find the free CCleaner for PCs at go.pcworld.com/ccleaner.—*Brad Chacos*

... and a Question

“Your Portable PC Survival Kit” was very informative. The only thing that was missing was a recommended size for the thumb drive. What size does the author recommend for both the survival-kit drive and the SystemRescueCD drive?

Larry Haynes, via iPad

Editor’s response: I’ve never counted the bits and bytes, but a 4GB flash drive should do the trick—buy an 8GB one if you’re particularly cautious. Such drives cost less than a supersized lunch now.—*Brad Chacos*

Regarding “The Dirty and Dangerous Side of Tech” [May]: Thank you for such a topical and deep article.

*anankefatum,
PCWorld.com forums*

Greenpeace Sermonette?

No thanks for the Greenpeace sermonette, “The Dirty and Dangerous Side of Tech” (May).

If I want a magazine chock-full of sustainable, green, new-age superstition and disinformation, I

know where to get one for free. I bought *PCWorld* for information on computing.

Kevin C. O’Kane, Cedar Falls, Iowa

Throwaway Electronics

Regarding “How Companies Get You to Keep Buying New Stuff” [*Consumer Watch*, May]: When the controversy over Apple and Foxconn came up, I was struck by the realization that even the cheap, hard-to-repair tech we do own was >>

probably hand-assembled by someone being paid pennies an hour. All the more reason to treat it with respect and get as much use out of it as possible. Who would want to hear that the products they work so hard to make, but can't afford to own, are treated as disposable junk by the people who buy them?

Ambular, PCWorld.com forums

A DIY Home Theater PC's Price

I so desperately want a home theater PC, and I was so hopeful when I started reading your article ["Build a Tiny Home Theater PC With Intel's NUC," *Here's How*, May]. After all, smaller should be better than bigger, and do-it-yourself should be cheaper than ready-made. But not in this instance: This do-it-yourself project is woefully overpriced. [Editor's note: The

author cited a cost of \$360 for a stripped-down NUC.] I can get a decent smaller desktop to use as a dedicated home theater PC for much less money. I can think of no good reason to assemble all the parts (including an operating system) necessary and be left with a lot less PC for a lot more money.

Barry Saxon, North Ridgeville, Ohio

A Place for Windows RT?

Regarding your online article "IDC Joins 'Ditch Windows RT' Bandwagon" (go.pcworld.com/idconrt): I'm not so sure Windows RT should be thrown in the trash. RT should be used on tablets that are in the \$200-and-below price range. In other words, RT should be challenging Android in the cheap-tablet market.

bikdav, PCWorld.com forums

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CORRECTION

IN "THE DIRTY AND Dangerous Side of Tech" (May), we should have identified beryllium as an alkaline earth metal.

In May's *Hassle-Free PC* ("Convert the Format of a Kindle Ebook"), step 2 directed readers to an outdated version of the Calibre utility; we have since updated our redirect, go.pcworld.com/calibre, with the correct version of Calibre.

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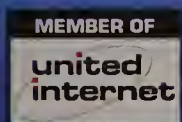
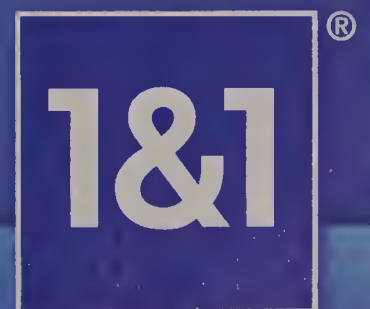
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Forward



Design Innovation: The PC's Salvation?

BY JARED NEWMAN

AS LAPTOP AND DESKTOP sales plummet, some PC manufacturers are wading out of their comfort zones in hopes of breathing life back into the market.

Two recent examples: Toshiba, a manufacturer perhaps best known for mid-range PCs at competitive prices, took a swing at the ultrapremium market with the Kirabook, a thin and light

As tablets gobble up low-end sales, PC makers are creating increasingly innovative designs, hoping to spur high-end demand.

laptop with an ultrahigh-resolution display on a par with Apple's Retina-packing MacBook Pros. And HP placed a big bet on futuristic motion controls, announcing that it will bundle Leap Motion controllers with select PCs, embedding the technology directly into future devices.

Other PC makers are trying

their own experiments. Acer has teased about a "unique notebook" that may be able to convert into a desktop with a raised touchscreen. Meanwhile, Asus has launched a desktop that transmogrifies into a gigantic detachable Android tablet, and Lenovo is preparing a tabletop touchscreen PC designed with digi-

tal board games in mind.

These are early signs of a sea change among PC makers, companies that for years subsisted on selling unremarkable products—spec lists and price tags, with no major distinguishing features. That strategy no longer works in the age of tablets.

PC makers are being forced to experiment because the traditional laptop and desktop markets are drying up. Unit sales are in decline, »

and so are revenues. HP saw its PC revenues fall by 8 percent last quarter, and Toshiba endured a 16 percent decline in PC sales during its 2012 fiscal year due to falling demand in the United States.

But don't blame Windows 8 alone for the PC industry's woes. PC sales were on the decline before Microsoft's operating system went on sale, largely because tablets have altered people's purchasing decisions.

As Gartner analyst Mikako Kitagawa notes, most households no longer feel the need to have a laptop or desktop for each person. Instead, people are buying tablets for content consumption, and hanging onto one or two household PCs for productivity. And as Brad Chacos points out in this month's *Editor's Desk* (page 7) computers have become like household appliances: Users replace them only when necessary.

"The PC's not going to be an everyday device for most consumers," Kitagawa says, looking ahead. "Tablets will

Windows 8 alone is not to blame for slumping PC sales.



Some forthcoming HP and Asus laptops will ship with Leap Motion gesture controls embedded.

probably take that position."

So PC makers are turning more attention to producing premium PCs, designed to attract shoppers who want a product built to last.

Toshiba's Kirabook and Acer's upcoming laptop-desktop crossover are examples of that trend, Kitagawa says. But selling these new premium brands won't be easy. Acer, for example, cemented its reputation for dirt-cheap laptops in the netbook era. That may explain why the company is using a Star Trek tie-in to promote its next premium PC.

All of this is not to say that

PC makers are ignoring the low end of the market. Later this year, consumers can expect touch-enabled Windows 8 notebooks running on Intel's Bay Trail processors, at prices as low as \$200,

along with touch-enabled Ultrabooks selling in the \$500-to-\$600 range.

Still, whether such budget Windows 8 devices can compete with Apple's iPads and cheap tablets like Amazon's Kindle Fire is unknown.

Meanwhile, PC makers will try to sell relatively expensive machines—which is why we'll see more interesting products aimed at grabbing shoppers' attention.

To sell, a high-end PC needs to stand out.

Difficult Times, Desperate Measures

Granted, PC makers have always included expensive products in their lines; but in the past, the price differences have typically reflected variations in component speeds. The higher the price, the heavier the hardware inside: It was as simple as that. But PC makers are focusing now on unique features, rather than on raw performance, to justify higher prices.

Patrick Moorhead, president and principal analyst at

Moor Insights and Strategy, sees PC makers' interest in experimentation as an offshoot of what began last year with Windows 8 hybrids and convertibles. HP's Leap Motion devices and Acer's convertible notebook are part of a "second wave" intended to make the PC cool again.

Over the next year or so, Moorhead expects PC makers to refine those hybrid designs, while also introducing new technologies, such as eye-tracking, voice commands, and wireless connectivity, to larger displays.

Tablets can't compete with the power or profit margins of high-end laptops, making pricier products a possible safe haven for PC makers. But first, manufacturers must convince consumers that dropping the extra bucks in these cash-strapped times is a worthwhile investment.

Will such gambles pay off? We won't know for sure for some time. One thing is certain, however: PC makers, finally, are thinking outside the ho-hum black box.

Ads Coming Soon to Your Outlook.com Inbox

IT WAS GOING to happen sooner or later: The clean, minimalist Outlook.com will soon start displaying advertisements alongside your inbox and email messages.

Microsoft announced users in the United States and Brazil will be the first to see the new-format ads, christened versaTiles. Australia, Canada, France, Germany, Italy, Japan, the Netherlands, Spain, and the United Kingdom are set to follow suit soon.

The New versaTiles

Microsoft's versaTiles are basically display ads based on flexible-size tile strips that appear along the right-hand side of the screen, next to your main inbox view. They also appear when you are inside an email.

At first glance, the ads appear similar to the text ads Gmail users get in their inbox, but when you hover over the Outlook ads, they reveal images, videos, or more info. The Outlook ads are targeted

at online retailers, which can pick from three templates for slideshows, videos, images, or catalog-style advertisements.

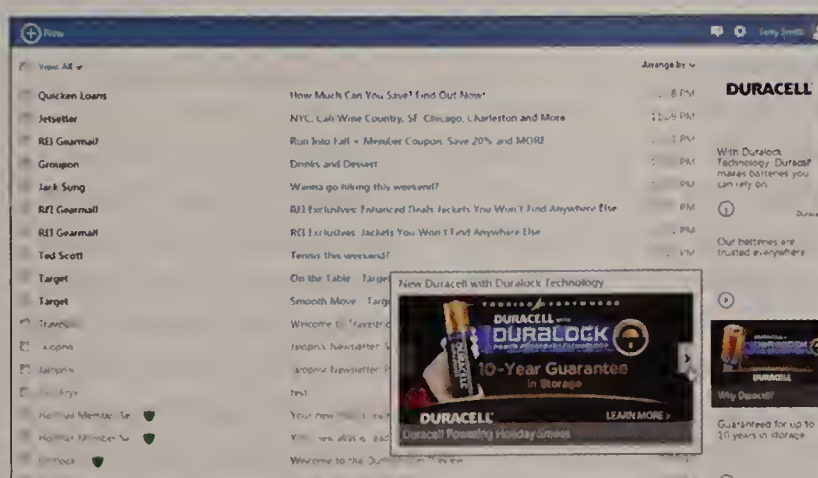
Four to five ad tiles are located on the right side of Outlook.com; advertisers can buy an entire lot and customize each tile to show different content or messages.

Ads Inevitable?

Since Outlook.com is a free service, used by 60 million people at last count, ads in its interface were bound to arrive sooner or later.

At least you won't see the standard type of banners cluttering up the site. Instead, you'll see more carefully prepared campaigns.

But since Microsoft doesn't scan your email to serve ads based on topics—as Google does with Gmail—the chances of the Outlook.com ads being as carefully targeted as Gmail's are not that good. So Outlook.com's ads may not be as relevant to you as Google's ads.—*Daniel Ionescu*

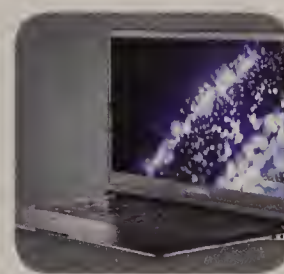


An Outlook.com mailbox with a versaTile ad showing.

BRIEFS

Samsung Changes PC Naming Scheme

Samsung has announced that it will gather all its Microsoft boxes under the ATIV brand, simplifying nomenclature. The move will affect Samsung's Series 3, 5, and 7 all-in-one computers and more than half a dozen of its laptops. For example, the all-in-one models, which the company announced last summer, will be called the ATIV One 3 (Series 3), ATIV One 5 (Series 5) and ATIV One 7 (Series 7).



Report: Amazon Plans Own Set-Top Box

After conquering the low end of the tablet market with the Kindle Fire, Amazon may be getting ready to invade the living room with a television set-top box. Citing three unnamed sources, *Bloomberg Businessweek* reports that Amazon is planning to launch its box this fall. The report doesn't say how much the device will cost or what features it will have.

LG Hopes to Release an OLED Smartphone

Yoon Bu-hyun, vice president of LG's mobile division, recently said that the company plans to release a smartphone with an OLED flexible display during the last three months of 2013, according to the *Wall Street Journal*. LG Electronics and LG Display will work together to develop the phone, Yoon said.



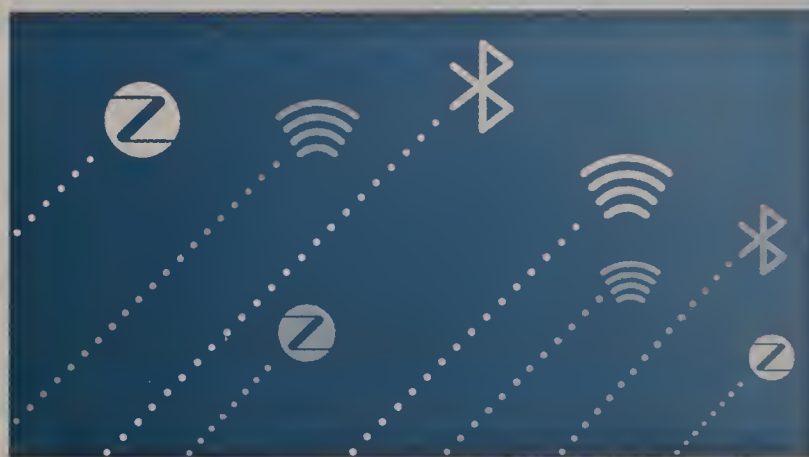
Western Digital's Ultra-slim Ultrabook Drives

The drive toward dirt-cheap Ultrabooks gets a big boost with the release of Western Digital's new ultraslim spinning hard drive, a barely-there piece of hardware even thinner than the iPhone 5. Clunkily called the WD5000MPCK, it's a 500GB traditional hard drive that measures just 5mm (0.20 inch) thick. It has a suggested retail price of \$89 and is shipping now to computer makers.

How Wireless Networks May Learn to Live Together

RESEARCHERS AT THE University of Michigan have invented a way for different wireless networks crammed into the same space to say “excuse me” to one another.

Wi-Fi shares a frequency band with the popular Bluetooth and ZigBee systems, and all are often found in the same places together. But it’s hard to prevent interference among the three technologies because they can’t signal each other to coordinate the use of the spectrum. In addition, different generations of Wi-Fi sometimes fail to exchange coordination signals because they use wider or narrower radio bands. Both



problems can slow down networks and break connections.

Michigan computer science professor Kang Shin and graduate student Xinyu Zhang, now an assistant professor at the University of Wisconsin, set out to tackle this problem in 2011. Last

July, they invented GapSense, software that lets Wi-Fi, Bluetooth, and ZigBee all send special energy pulses that can serve as traffic-control messages. GapSense is ready to implement in devices and access points if a standards body or a critical mass of ven-

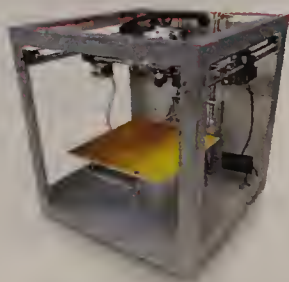
dors gets behind it, Shin says.

Wi-Fi LANs are a data life-line for phones, tablets, and PCs in countless homes, offices, and public places. Bluetooth is a slower but less power-hungry protocol typically used in place of cords to connect peripherals, and ZigBee is an even lower-powered system found in devices for home automation, health care, and other purposes.

Each of the three wireless protocols includes a mechanism for devices to coordinate the use of airtime, but they are all different, Shin says, and they can’t understand one another at all.

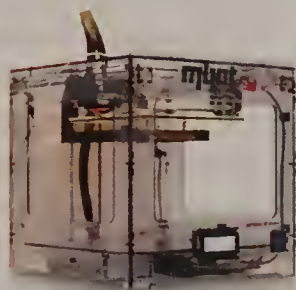
—Stephen Lawson

TECH SPOTLIGHT: 3D PRINTERS



SOLIDOODLE

Brooklyn’s Solidoodle (see go.pcworld.com/solidoodle for an interview with its founder) offers the most affordable consumer 3D printer model: Fully assembled, the Solidoodle 2 will cost you only \$499. However, more advanced models run upwards of \$799. All sales are handled through the Solidoodle website, and units are built to order with a lead time of four to eight weeks. www.solidoodle.com



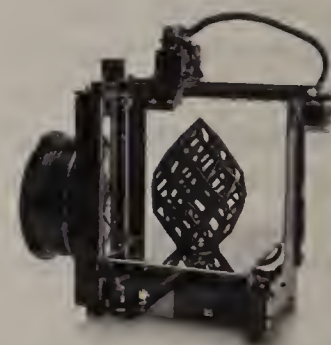
MBOT

China-based Mbot offers a personal 3D printer starting at \$999 as well as a slightly larger (and more stylishly designed) transparent version for only \$1199. The Mbot is an FDM model (meaning it uses traditional Fused Deposition Modeling; this is also called FFF or Fused Filament Fabrication). It can print in two colors and uses petroleum-based ABS plastic to render objects. www.mbot3d.com



CUBIFY CUBE

Cubify, one of the oldest names in 3D printing, now boasts one of the most versatile models (and a *Star Trek* app!). The company’s Cube and CubeX printers sell for \$1299 and \$2499, respectively, and can use both ABS and PLA plastics. The CubeX is able to print in three colors and can render an object the size of a globe or basketball; the Cube is billed as an easy-to-use home 3D printer. www.cubify.com



MAKERGEAR M2

Ohio’s MakerGear offers a do-it-yourself approach to 3D printing and sells a fully assembled model for \$1750 (or \$1475 for a kit that you assemble yourself). The printer works with either ABS or PLA plastics, but can render only with one color at a time. MakerGear also provides its Creator “software toolchain” to help you design the objects you want to render. www.makergear.com

RESELL OR RECYCLE?

What Old Tech Is Worth on eBay



1980 Atari 2600

Original price: \$199

Sold on eBay: From \$60 for a broken example to \$803 for an unused, boxed console with 20 games. Recycle a 2600 unless it works and includes games.



1982 Commodore 64

Original price: \$595

Sold on eBay: From \$49 for a specimen with damage to \$545 for a machine in like-new condition with the original box, cables, and manuals still wrapped.



1981 IBM PC 5150

Original price: \$1565 without a monitor or any floppy drives.

Sold on eBay: From \$139 for a dirty, broken system to \$433 for a complete, working system.



1996 Motorola StarTac

Original price: \$1000

Sold on eBay: From \$1 for a busted handset to \$142 for a functional phone with the original leather casing and headset.



2000 Sony PlayStation 2

Original price: \$299

Sold on eBay: About \$400 for a lot of ten. The best-selling gaming console of all time might still deserve a nice dry shelf in your garage.—Elsa Wenzel

Microsoft's Two-Factor Security

IF YOU'RE AN active user of Outlook, SkyDrive, Office Web Apps, or other Microsoft services, you may want to add two-step verification for an extra layer of security.

Microsoft rolled out this option, also known as two-factor authentication, in April; it can be enabled through account settings.

As the name suggests, two-step verification requires you to log in with a second form of identification, in addition to your username and password.

For instance, Microsoft can send you a code via text message or email, which you enter while logging in to your account for the first time. You can then set that device as a favorite, so you don't need a new code at every login.

The verification will reset only if you don't access the device for 60 days or revoke access via Microsoft's website.

For more about two-factor authentication's added security, see the *Privacy Watch* column on page 39.



—Jared Newman

Ricoh GR Fixed-Lens Compact Camera

The trend in cameras today is small, lightweight, and powerful, and that is the intent of the Ricoh GR, Pentax Ricoh's new compact, fixed-lens digital camera for photography enthusiasts. It has a 16.2-megapixel APS-C CMOS sensor paired with an f/2.8 maximum aperture lens and a newly designed autofocus system. Together, they promise improved low-light performance, shallow depth of field, and wide dynamic range in a petite, lightweight shooter. But you can't attach an electronic viewfinder. The Ricoh GR advanced digital compact camera was released in May and costs \$800.—Jackie Dove



Android and Apple App Store Woes Sound Alarms

MICROSOFT and BlackBerry have been tripping over themselves to toss cash at developers and beef up their app stores in recent months, trying desperately to gain ground on iOS and Android.

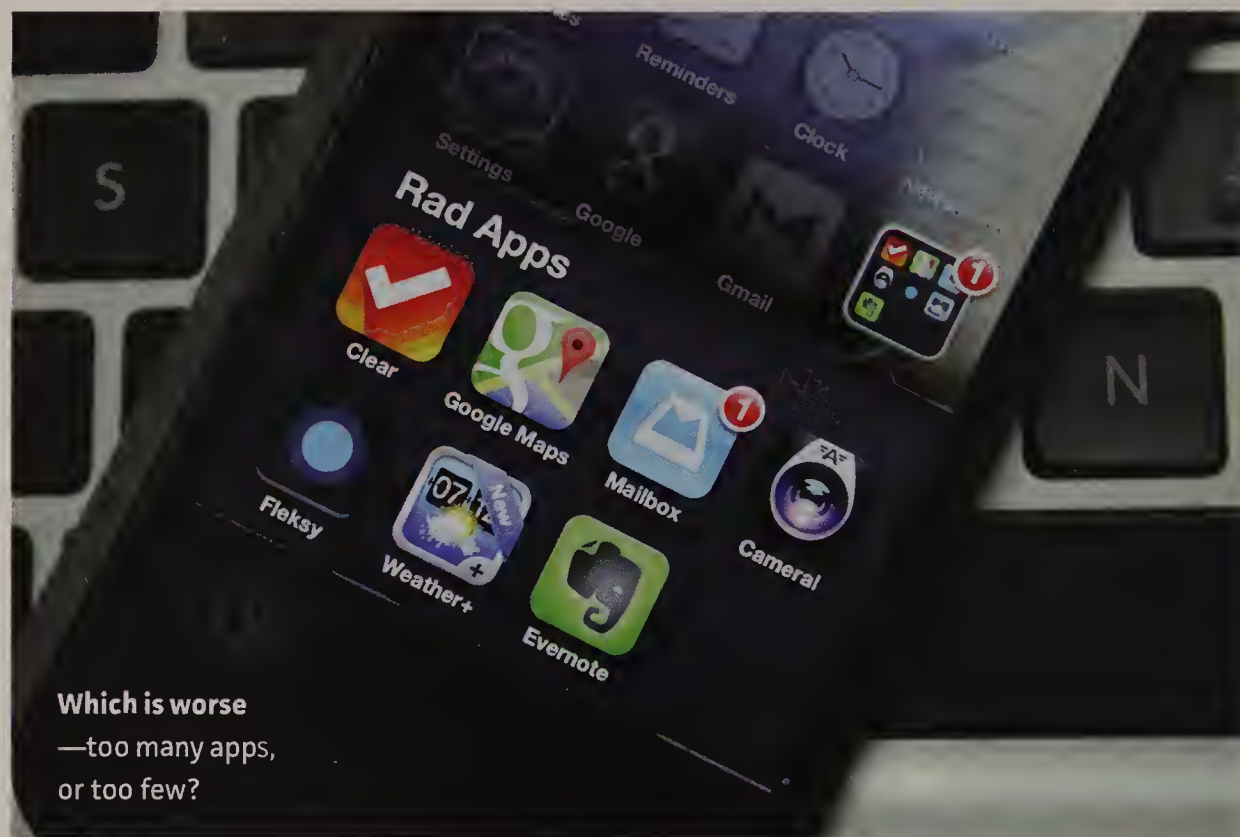
But is the rush to fill app store shelves a good thing? Quantity doesn't equal quality, as evidenced by recent Apple and Google moves designed to keep their developers in check and clean up some of the less desirable apps in their shops.

Apple is the 800,000-pound gorilla in the mobile app world after unofficially breaking the 800,000-app barrier last month, while Google is nipping at Apple's heels with over 700,000 apps. Lagging far behind are BlackBerry and Microsoft. But all four have problems related to the number of apps in their stores.

Quality vs. Quantity

Tim Shepherd, a senior analyst at Canalys, believes app ecosystems will determine the winners or losers in the mobile realm. BlackBerry 10 recently passed 100,000 apps—up from 70,000 at launch in January—and Microsoft's Windows Phone app store currently has around 150,000 apps.

Shepherd says each needs "to do more to make building apps for [their] platforms a priority for developers." However, Microsoft and BlackBerry's strategies to bulk up their stores in the app arms race seem better suited to filling



their shelves with shovelware rather than building a sustainable app ecosystem with quality software.

Before BlackBerry 10 launched, RIM (as the company was known then) held "Port-a-thon" weekends that gave developers \$100 for every Android app ported to the BB10 platform. Tens of thousands of apps were submitted, and a fifth of all BB10 apps available today are Android apps at heart.

But the ported Android apps don't run anywhere as smoothly as native BB10 apps, and they don't take advantage of the BlackBerry OS's built-in notification system. To put it simply, they're a second-class experience.

Microsoft followed in BlackBerry's footsteps recently, offering developers a \$100 bounty for every new

Windows Phone 8 and Windows 8 app published by June 30, up to a total of \$1000 for each platform.

But it's unlikely that dangling a mere \$100 would inspire app makers to make quality apps for BB10 or Windows Phone 8. Instead, such a low bounty inspires slapdash submissions or lazy, straight-up ports of apps from other platforms.

Cleaning Up the Mess

Apple vets every app submitted to its store, and despite some blunders, the system largely works. Despite the high overall quality of App Store apps, however, their sheer quantity introduces some major issues. Sifting through 800,000 apps is high impossible, and it's also very difficult for noteworthy new apps to gain recognition by

cracking the App Store's spotlight lists.

Google, which doesn't check apps before they get published, has a harder task. Over the past year, the company has had to repeatedly remove malicious apps from its Google Play Store, and many of the Android apps available are of dubious quality. TechCrunch reports that Google removed nearly 60,000 spammy apps during February, the company's largest purge to date.

Sure, BlackBerry and Microsoft need to gain ground on their well-entrenched competitors, but they could wind up suffering from all of Apple's and Google's current quantity-related headaches with very few quality apps to show for their trouble.

—Daniel Ionescu and
Brad Chacos

Google Drive: Work Offline

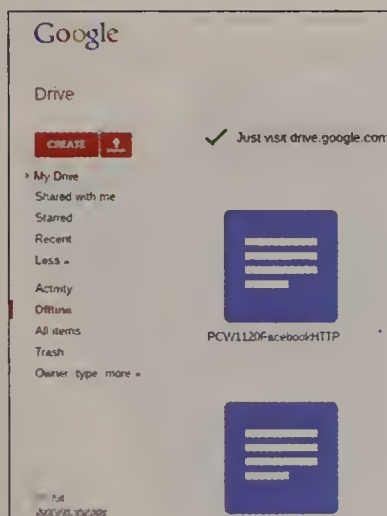
GOOGLE DRIVE users don't have to worry anymore about accessing their documents without an Internet connection, as long as they're using Google's Chrome browser.

Chrome now supports automatic offline syncing for Google Drive, so you can read and edit any document, spreadsheet, or presentation even when offline. To do so, you must have Drive's Chrome Web App installed, and enable offline access in the dialog box that appears.

Chrome previously allowed offline editing for individual documents, but that meant you had to plan ahead and choose which files to sync. The Drive app for Chrome syncs all files automatically.

If you edit a document offline, the changes will show in the online version once the Net connection is restored.

—Jared Newman



You can work offline in Google Drive via the Chrome browser.

GEEK TECH

A Projector in Your Smartphone?

IF YOU THINK the Retina display on an iPad looks unreal with its 2048-by-1536-pixel resolution at 264 pixels per

inch, just imagine a display with 2500 individual LEDs in a package that's only 5 square centimeters in size—that's smaller than just about any piece of your phone.

I spoke with Lumiode vice president Brian Tull, who says that the company's microdisplay will be 30 times brighter—and several times more efficient—than your traditional LED-backlit screen, making the display usable even in bright sunlight. Unlike your HDTV or PC monitor, these LEDs—each of which acts as an individual pixel—do not need to shine light through polarizing layers or filters, which can dim the final picture presented on a more traditional display.

Lumiode technology is what's known as an *emissive display*—that is, it provides power only to the LEDs that need to be lit, thus saving power and providing a display with true blacks that you can really get only with a high-end LCD or plasma TV.

When paired with a lens, the Lumiode display doubles as a small projector that Tull says could easily be added on as a pico-projector-like device to just about any smartphone.

Alternatively, the microdisplay (which uses micro-size LEDs) could be projected onto a transparent medium, such as a Google Glass-mounted eyepiece (see page 96) or a car windshield, to act as a heads-up display.

"The reason this exists now is because our CEO, Vincent Lee, worked out the method of controlling a large amount of LED pixels by growing high-quality silicon transistors," Tull explains. Both silicon transistors and the ability to pixelate LEDs have been around for a while.

It's only recently, however, that Lumiode has managed to marry the two technologies together using a process developed at Columbia University. With this technique, Lumiode can use a very-high-density LED array as an actual display. The team is currently working toward a complete prototype that incorporates all the technology into a projector.

Among other working milestones, the Lumiode team believes that it's on the verge of moving its microdisplays from monochromatic to full-color displays with red, green, and blue LEDs. In the next year, the team expects to start creating really small display formats with resolutions of roughly 320 by 480 pixels.—Kevin Lee ●

Microdisplays could be the next big thing in smartphones.



One of Lumiode's LED microdisplays under a microscope.

Visit the Geek Tech blog at go.pcworld.com/geektech for hacks, tips, and hardware news.

Staff Picks

NEW PRODUCTS THAT HAVE OUR EDITORS DROOLING



Toshiba Kirabook

With 221 pixels crammed into every inch, the Kirabook's display is practically equal to that of the Retina-equipped MacBook Pro. But this Ultrabook is lighter, thinner, and upgradable to a touchscreen. With a solid-state drive, an all-metal chassis, and a subtly curved keyboard, its pricing is expected to start at \$1599. go.pcworld.com/kirabook

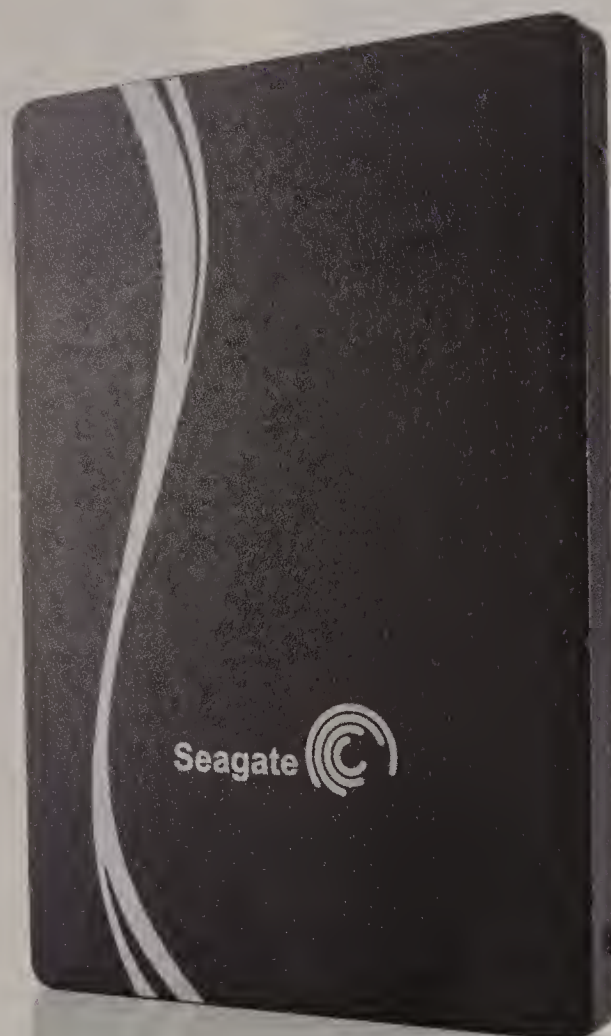


Sony DEV-50V/B

Sony's new recording binoculars have a dual-sensor design that records 3D HD video and shoots 20.4-megapixel stills—perfect for birding fanatics. It has a water- and dust-proof coat, increases zoom over its predecessor—the DEV-5—to 25X, and weighs a third less to ease a \$2000 price tag. go.pcworld.com/dev50v

Seagate Series 600 SSDs

Seagate is jumping into the consumer SSD market for the first time, offering its Series 600 and Series 600 Pro drives in 120-, 240-, and 480GB capacities. The solid-state drives are available in both 5mm- and 7mm-high sizes, so they'll fit inside standard notebooks as well as Ultrabooks. Seagate had not announced prices at press time, but the 240GB Pro model was preselling for \$190. go.pcworld.com/seagate600

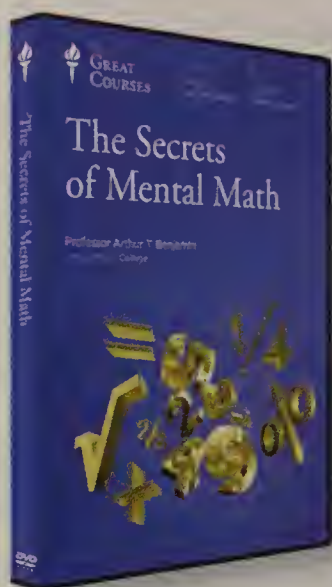


Logitech G19s Gaming Keyboard

The \$200 G19s has to manage all the add-ons gamers want from a keyboard without sinking under their weight. It comes packed with an LCD dashboard of game stats and system data, banks of customizable keys, and touches such as changing backlight colors and a toggle that keeps you from exiting a game by nudging the Windows key. go.pcworld.com/g19s ●

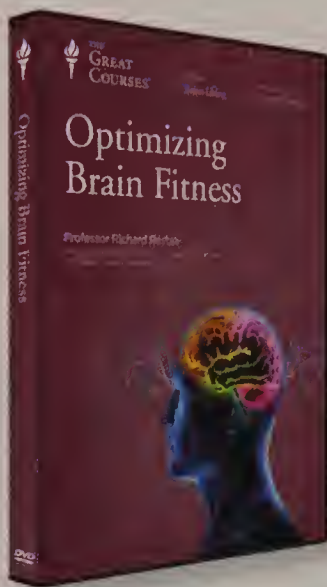


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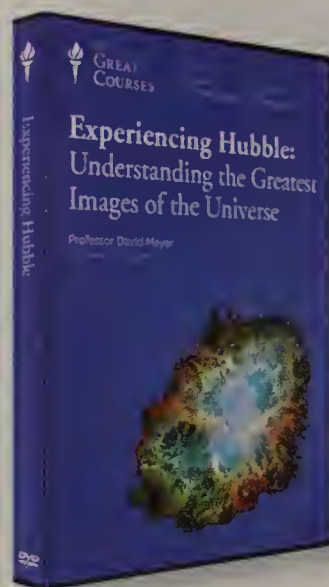
In **The Secrets of Mental Math**, award-winning Professor Arthur T. Benjamin teaches you the basic strategies of mental mathematics. This powerful ability to perform mental calculations will give you an edge in business, at school, at work, or anywhere else that you encounter math.

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(30 Minutes/Lecture)



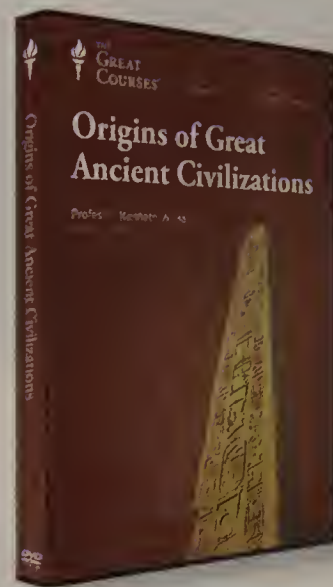
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12 Lectures
(30 Minutes/Lecture)



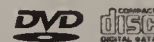
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12 Lectures
(30 Minutes/Lecture)



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Consumer Watch

Counter-Free Buying Is a Boon for Customers

BY MARK SULLIVAN

THE SOLID OLD counter that we stand in front of to deal with our favorite companies is probably going away. And it should. Though counter service has been a staple of retail business for as long as anyone can remember, new technologies and approaches to customer service are ushering in a new vendor/customer dynamic that does not involve a chunky piece of furniture dividing the two.

A Tale of Two Stores

I ventured out to buy a phone recently and experienced this new counter-free dynamic twice. On my first stop, at the Apple Store, a representative greeted me as I walked in, and I explained what I wanted. As we stood chatting by the table where all the iPhones are, he grabbed his own iPhone and checked the inventory to see if they had the model I liked. They did, he put in a request for one, and another Apple employee walked up with it a couple of minutes later.

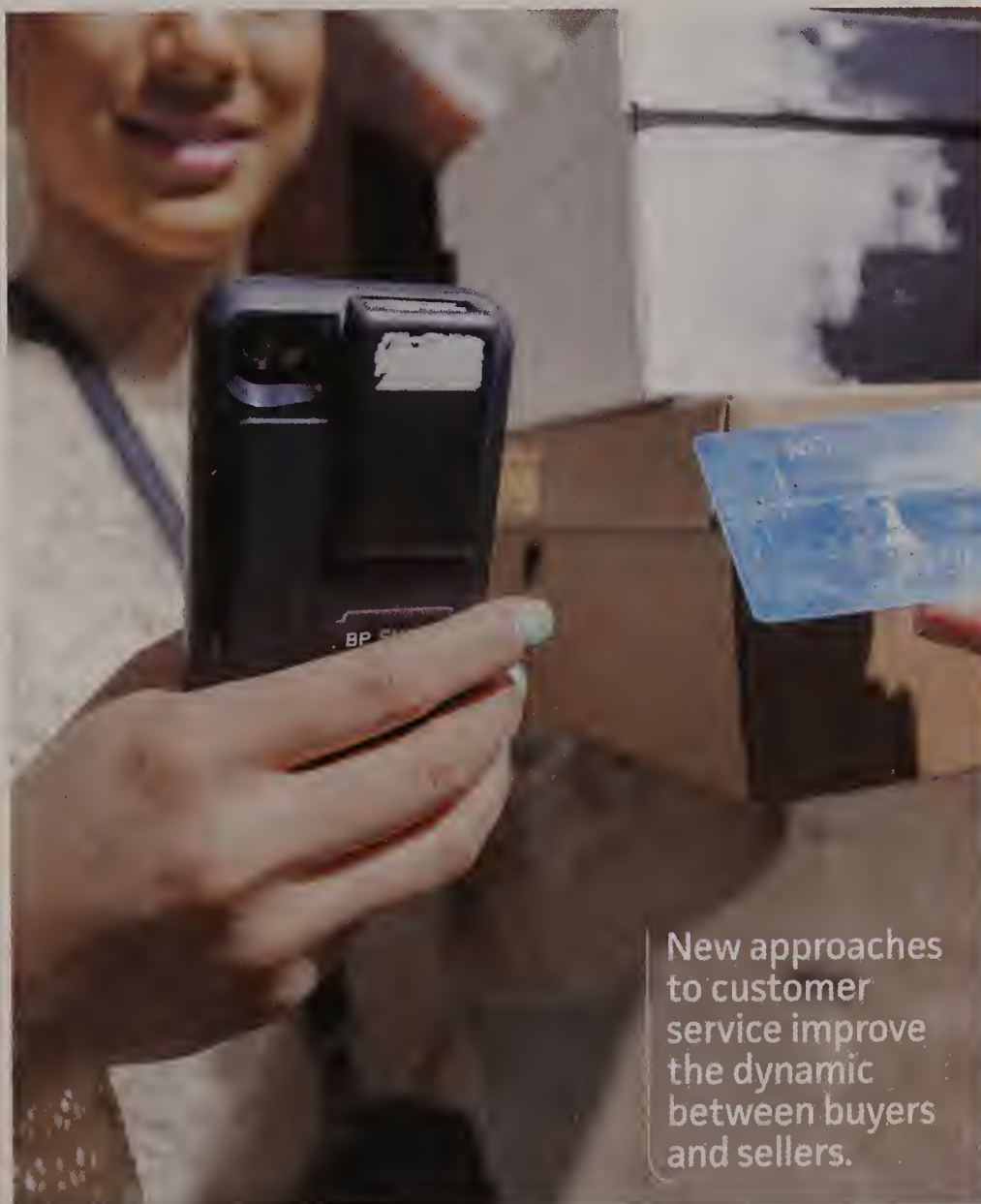
I pulled out my credit card, he slid it through the card reader built in to the side of his iPhone case, and the deal was done.

Such smartphone card readers are becoming more common. Card-reading phone cases like the one the Apple rep used are now widely available to businesses small and large, from the likes of Innerfence, Swipe It, and Verifone. And Square has sold thousands of its little white card readers that plug into a smartphone; a companion phone app lets the salesperson run the charge and get the customer's sign-off. Approaches like this are a completely

different experience than standing at a counter.

With iPhone in hand, I headed to the Verizon store to buy a service plan. A tablet-bearing Verizon rep met me at the door. She logged me in, along with information about my needs, and soon another rep was there to help me. I showed him my phone and discussed my service plan options. To complete the purchase and activate the phone, however, we had to move to the counter.

It's not surprising that tech and telecom companies have been the first retailers to adopt technology-driven approaches to customer service, but even hotels are starting to experiment. A few have discovered that checking in a guest via a tablet in the lobby, say, offers guests a far better experience. No more having to schlep your luggage through the lobby to the front desk, where you then cool your heels in line. >>



New approaches to customer service improve the dynamic between buyers and sellers.

One company, called OpenWays, makes hotel-room door locks that, with the help of a companion phone app, let guests check in right at the door to their room. The lock communicates with the hotel reservation system to verify that the guest has reserved the room; if the reservation checks out, the door opens.

Psychology of Counter Service

OpenWays' technology is very new, and few hotels use it. Counter service is still the rule in hotels and most other retail businesses. But while functional, the counter imposes a barrier, and can create an adversarial mentality between the two parties, especially if a problem arises during the transaction.

With the counter removed, the dynamic changes. To me it feels like a more collaborative effort. And I'd argue that with no counter to provide a buffer, disagreements would not escalate as quickly. I might be less inclined to raise my voice at someone who I thought was treating me unfairly if I was standing right there on an equal footing with them.

Businesses are just now figuring out how the latest technologies can change the way they interact with their customers, and I expect this trend to grow.

In my visit to the Verizon store, I was able to start with a counter-free transaction but not finish that way, because the company has not yet made its billing and service-activation databases available on mobile platforms like phones and tablets.

Extending their back-end systems to mobile platforms is often a slow and expensive undertaking for large companies. But I'm convinced that they'll eventually spend the time and money needed to get rid of the counter. Because if Verizon, for example, doesn't evolve its customer service methods, then it will lose out to competing carriers that do.

As counter-free service becomes more common, customers will start to expect it at the hardware store, the grocery store, and the car rental agency, too.

ON YOUR SIDE

I HAVE SEVERAL older versions of Roxio Creator, including Roxio Creator 2012 Pro, and I have always been able to obtain good support—until now. The 2012 version does not play Blu-ray videos as advertised, nor does it let me check for updates online. Instead, it gives me this error message: "Either you are not connected to the Internet or the Flexnet servers are currently unavailable. Click Retry if you know that you are connected to the Internet. Click Cancel to skip the check for updates." I know that I am connected to the Internet, but it gives that message whenever I try to update the program. I tried updating some of the older versions of the software on other machines and got the same error message! After finding no help on the company's website, I called tech support and was told that I need a support code to get help. To get the code, my products have to be registered (which they all are), but I can't find a way to get the code. Can you help?

—Bob McElwain, Victorville, California



ANNE KANDRA

OYS RESPONDS: We contacted Roxio, and a company representative said, "I checked our customer support records, and Mr. McElwain was sent a free warranty support code and has received help from our support agents. According to [our records], his case been resolved. I have emailed him to see if there is anything else we can do to help."

The representative explained that customers receive free 14-day warranty support when registering their product. Upon registration, Roxio sends an

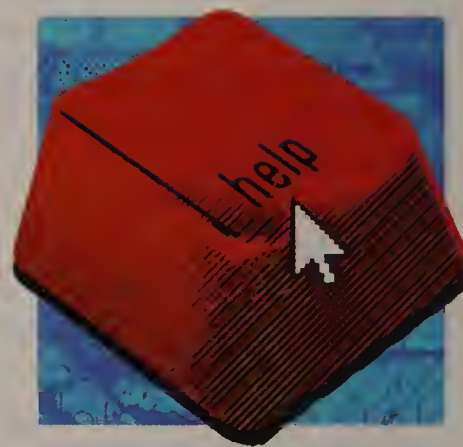
email with a warranty support code and instructions for contacting tech support. The representative apologized for McElwain's difficulty in reaching tech support, and sent his feedback to the customer support management team.

Our advice: Keep records of all registration info. You might need it, especially when—as in Corel's acquisition of Roxio in 2012—companies change hands.

Recall Alert: Home Depot Recalls CE Tech Riser Cable

Home Depot is recalling its 1000-foot CE Tech Riser due to fire hazard. The riser cable, which runs between floors of a building as a data cable, does not meet fire-resistance standards for a riser cable. Sold from January 2013 through February 2013 for about \$100, the gray cable is marked "(UL) E316395." The cable's box is blue and black, and is marked "CE Tech 1000 ft. riser cable, Cat 6 23-4." Consumers should return the cable to Home Depot for a full refund. Contact the company at 800/394-7519, or go to www.homedepot.com and click *Product Recalls* for more information.

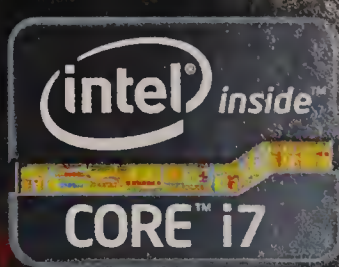
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SKEPTICAL SHOPPER

Keep Your Home Secure While You're Away

PLANNING A SUMMER getaway? The last thing you want to worry about while you're gone is a break-in. Fortunately, you don't need to shell out for an expensive home security system. As long as you have a smartphone, an Internet connection, and a webcam (or an extra computer or mobile device with a built-in camera), you can set up your own surveillance system using one of the tools listed here.

iCam (\$5; Android, iOS): This system uses your computer's built-in or IP webcam to monitor and record motion, and then it alerts you when it detects activity. You simply download and install the webcam software from SKJM's site (www.skjm.com) on your computer, install the corresponding iCam app on your smartphone, and then configure a few settings (you definitely want to allow push notifications so that you receive alerts while you're away). You'll get an email when motion is detected, along with photos of whatever activity triggered the alert, on your phone.

People Power Presence (free; iOS): Have a spare iPhone, iPod touch, or iPad? Then you can set up a surveillance system. You just install the free app on both your current iOS device and the older device, set up an account, connect to Wi-Fi, and position the older-device-turned-video-camera to the area you want to keep an eye on. (You can purchase device stands and other accessories to help with positioning.) The app sends email alerts with short video clips attached when the device senses motion. You can also use it for two-way audio/video communication, so you can chat with the dogsitter when she arrives to walk Cujo—or simply touch base with your kids when they get home from school.

AtHome Camera/Video Streamer (free; Android, iOS): Similar to Presence, this system turns your extra smartphone, tablet, or computer (Windows or Mac) into a free surveillance system. Install the software both on the device serving as a camera and on your personal mobile device, and set up an account. You'll receive email alerts and video record-

Skip the pricey home-security setup, and use your smartphone and these (mostly) free and low-cost tools to keep tabs on your house.

ings when the system detects motion. The app also lets you remotely control sleep and wake functions on your computer, and schedule video recordings.

DropCam (\$149; Android, iOS): DropCam offers nearly effortless setup—simply plug the device into your computer and Wi-Fi network, give it a name, and you're done. It features remote-control zoom, night vision, two-way audio/video streaming, full 720p HD video quality, DVR and Web connection options, and more.

Lockitron (\$179): Start-up company Lockitron offers a hardware-based security system that lets you lock and unlock your door remotely from an iOS or Android smartphone. You install the device by fitting it around your existing deadbolt, and install the software on your smartphone. At \$179, Lockitron is not cheap, but for some folks the convenience of being able to remotely unlock the



DropCam gives you eyes on the ground when you're away from home.

door for friends or family members, ensure that the door is locked when it should be, and not have to deal with physical keys is worth it. Lockitron also lets you know when someone unlocks or knocks on your door, which could be particularly useful when combined with a webcam-based system.

Looking for a more traditional security product? Many telecom companies now offer affordable home security and automation systems that let customers manage everything from video monitoring to climate and appliance control from their smartphone. Verizon, for example, provides a service that lets customers visually monitor their homes, adjust the thermostat, control lights and appliances, lock and unlock doors, receive security alerts, and more for about \$10 a month (plus a \$70 activation kit). AT&T launched its own plan, called Digital Life, in March, and Xfinity also offers security and automation services.—Anne Kandra ●



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Photo by [unreadable]

Business Center

Five Steps to Going Almost Paperless

We show you how to sift, scan, and recycle your way to a near-paperless existence.

BY CHRISTOPHER NULL

IT'S OVER BETWEEN me and my file cabinet. Six drawers full of dead trees. Total weight: a gargantuan 194.7 pounds of paper. I can't think of any less useful way to utilize home-office space, especially when most of the contents, once filed, will never be touched again. My goal wasn't necessarily to dump every scrap of paper, but at least I wanted to get it all down to a single file-cabinet drawer. Here's how I did it, and how you can, too.

Sift and Sort Ruthlessly

Sifting through the paperwork took me two afternoons.

If you're embarking on a similar quest, this first step is the most difficult but also the most rewarding. Here are some of the dead-tree gems from my personal archeological expedition:

- Story ideas I jotted down ten years ago
- Writers agreements I signed in the 1990s
- FedEx shipping receipts from more than eight years ago
- Pay stubs from jobs long gone
- Endless files full of statements from banks and credit cards
- Many pounds' worth of product manuals

Recycle Immediately

It amazed me how much of this stuff was utter trash. What's more, many of the "important" items—including bank state-

ments and utility bills—were now available online, making paper copies (and even scans) of them redundant.

Judicious pruning of everything got my total paper load down to about 30 pounds after just one round of sifting through files. What remained was paperwork that I could scan, but I questioned whether the effort would be worth it. Were my taxes from 2006 something I would ever want to check again? I also had several legal records that I knew I should retain, but none of them needed to fill up a drawer. So I offloaded these types of documents to a storage box in the garage.

A second round through the "keepers" left me with just over 10 pounds of paperwork to deal with. These items were primarily medical records, documents printed on oversize paper, >>



some financial records, and documents related to real estate and auto purchases, and pieces of legal paperwork.

Scan Your Documents

Scanning was the next step, and I spent a while trying to strategize. Scanning documents to PDFs is the obvious choice, but then what? Many people like to store their stuff in Evernote. For me, I felt storing PDFs in folders on my hard drive would be just fine, plus it would be free from any monthly fees that come with online services. (Cloud-based services like eFileCabinet cost at least \$20 a month.) Many scanners, such as Doxie and Neat, are designed to easily archive documents, but I went with my Epson WF-3540. I scanned the documents in stacks of pages related to one another. I gave each file a name and put them into labeled folders on my hard drive. After scanning, my paper-file weight came to 5 pounds—about a 95 percent savings in weight.

Kick the Paper Habit for Good

The next step is to start paring down paper that comes through the mail. Just log in to your bank and utility service providers' websites, and sign up for electronic statement delivery or e-billing. To avoid junk mail, sign up to opt out of pre-screened offers for credit cards and insurance by visiting OptOutPrescreen.com.

Use Snail-Mail Scan Services

Earth Class Mail (go.pcworld.com/ecm) takes things one step further by virtualizing your entire physical mailbox. You have your mail sent to ECM, and it sends you scans of everything. You decide what to keep, trash, or have forwarded to you physically. Outbox is a similar service that's designed for residential users.

Within a few days, I went from nearly 200 pounds of paper to about 2GB's worth of scanned files, plus a small stack of documents that are easily stored. I also minimized paper by converting to online accounts and warding off junk mail.

SIMPLY BUSINESS

Mailbox for iOS: A Better Email App



RICK BROIDA

Use this excellent Gmail companion app to efficiently manage your email and navigate your inbox.

MAILBOX FOR IOS (www.mailboxapp.com), a much-anticipated email manager with a lengthy waiting list, has recently opened to all users. The question is, does it succeed as a business tool? The answer is absolutely, with a few qualifications.

When it comes to email, I think Apple's stock app does a pretty decent job. I particularly like the VIP option introduced in iOS 6. But most of us deal with a daily avalanche of messages, and Mail doesn't do much to help us manage an overloaded inbox.

Mailbox, however, makes email processing much quicker and easier. That's because you can accomplish any of four different functions depending on how you swipe a message.

While viewing your inbox, you can swipe right to archive an individual message or a little farther right to delete it permanently.

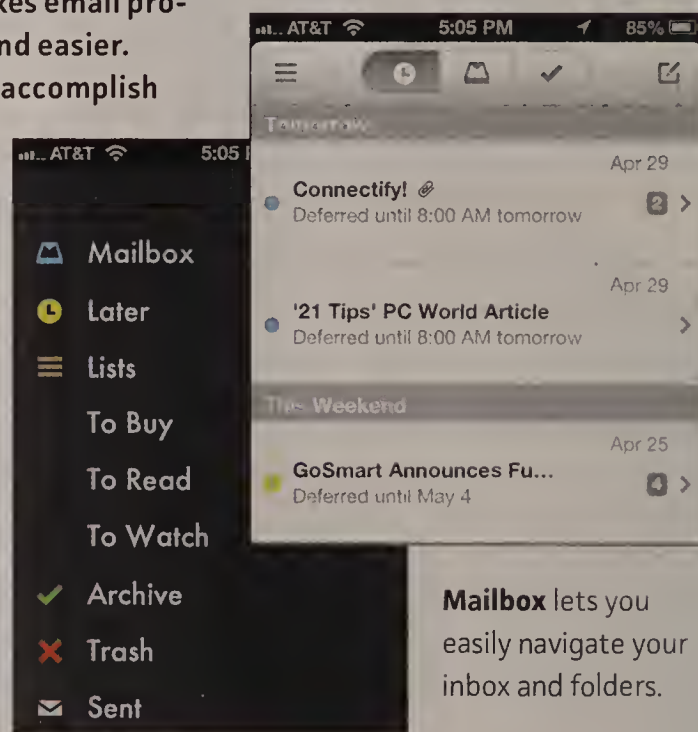
But the real action comes when you swipe left: Mailbox moves into snooze-

button mode, letting you delay that message for a later date and time. That incredibly useful capability used to require a third-party service like Boomerang or FollowUpThen (go.pcworld.com/snooze_email) and an added step of forwarding your messages. However, in Mailbox, it's baked right in.

A longer swipe to the left lets you bypass the snooze options and add your message to a list (the equivalent of Gmail's labels). You can also tap and hold a message, then drag it to a different spot in your inbox—a neat way to manually prioritize mail.

The only real downside to using Mailbox is that it's currently limited to Gmail. Eventually it will support other IMAP-based mail services, but for now only Gmail users can get in on the action.

If you're one of them, I definitely recommend taking Mailbox for a spin. It's free, it's available now, and it really can make a difference in how quickly and efficiently you whip through your inbox.



Mailbox lets you easily navigate your inbox and folders.

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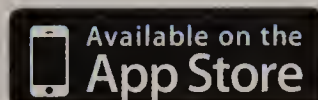
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NET WORK

Sign on the Digital Line Using E-Signature Services



CHRISTOPHER NULL

E-SIGNING TOOLS represent a much-needed response to the vast inefficiencies of dealing with physical signatures.

Are e-signed contracts legal? Indeed, most courts have made rulings that e-signatures are just as legitimate as the ink ones. Federal judges use digital signatures, after all.

Cloud-based services simplify the whole process of contract management. Mobile apps allow recipients to sign a document via fingertip on a smartphone or tablet (especially handy for in-person dealings). Here's how the major e-signing tools work.

DocuSign

Google-backed DocuSign is a straightforward and feature-filled service. After you upload files to DocuSign (the service keeps files in "envelopes" that you can send as a group), you drag and drop signature boxes onto the documents, which DocuSign then emails to your recipients. You can also set signature reminders, and set documents to expire if they haven't been signed in a timely fashion. A dashboard lets you keep track of outstanding and completed contracts. iOS and Windows 8 tablet versions are available. Plans range from free (basic service) to \$20 per user per month.

EchoSign

Adobe's EchoSign looks and acts a lot like DocuSign. You upload documents, set signature locations (or specify one at the end), and send contracts via email. A simple dashboard lets you track the status. EchoSign also allows you to incorporate faxed signatures for recipients who prefer to sign by hand, and an extra layer of verification permits you

Businesses are increasingly tossing the paper contracts and turning to electronic signatures. Here are four tools worth considering.

to require the recipient to enter a password or other personal information. Integration with various Adobe products makes this appealing for PDF-centric shops. iOS and Windows 8 tablet versions are available. Plans range from free (basic service) to \$399 per month.

Sertifi

This service isn't as pretty, but Sertifi has most of the basic features you need if the two major players above aren't to your liking. Documents can be signed electronically, or

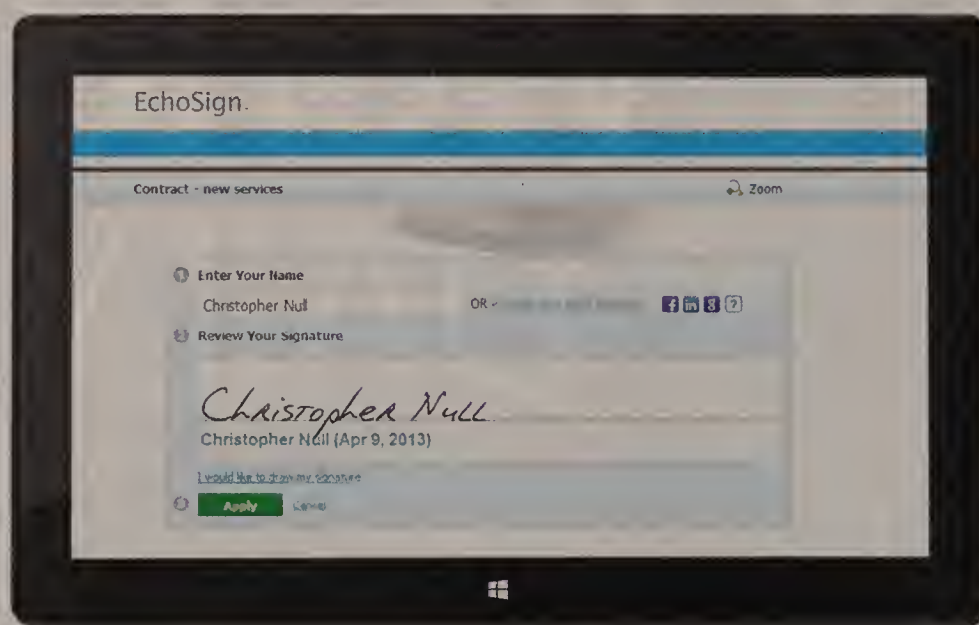
printed, signed, and faxed. You won't find any fancy dashboards, but you can still track files via Sertifi, and items are archived on the site. Plans range from free (basic service) to \$199 per month.

RightSignature

This is a somewhat cheaper alternative (\$14 a month gets you unlimited sending for a single user). But RightSignature has all the features

of its more expensive counterparts, letting you set field locations for signatures, initials, and dates on complex contracts and specify when contracts expire—though all signatures have to be drawn by hand instead of typed.

RightSignature also includes an online form builder, which lets recipients fill out more detailed contract information, such as phone number and address. This is handy if you're looking to use your e-signature service to generate boilerplate documents that need signatures, such as gym membership agreements or rental damage waivers. A dashboard is also included. An iOS version is available. Plans range from free (basic service) to \$49 per month (unlimited for ten senders). ●



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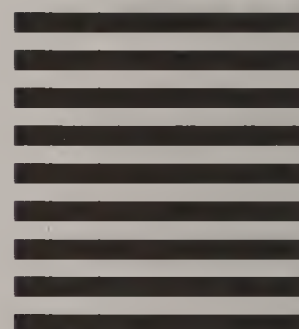
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The energy-efficient ES 750G

The ES 750G boasts out innovative power-saving outlets, eliminating wasteful electricity drains when equipment is not in use.

- 10 outlets
- 450 watts/750 VA
- 70 minutes maximum runtime
- Coax and telephone/network protection



The best-value ES 550G

The ES 550 uses an ultra-efficient design that consumes less power during normal operation than any other battery backup in its class, saving you money on your electricity bill.

- 8 outlets
- 330 watts/550 VA
- 43 minutes maximum runtime
- Telephone protection



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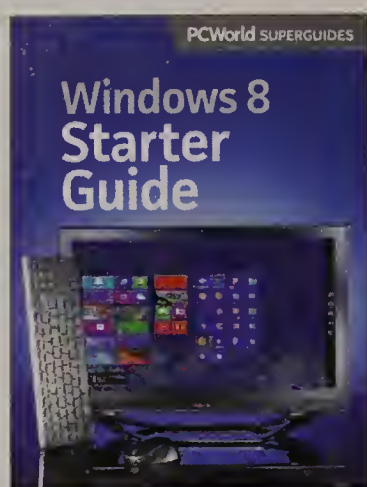
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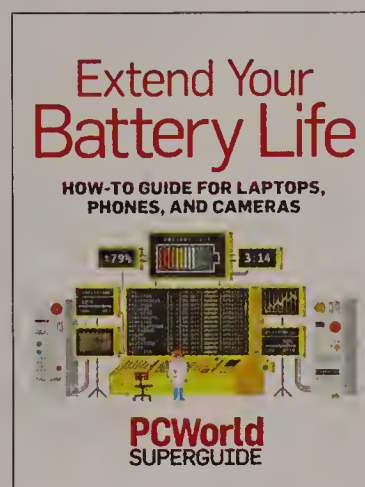
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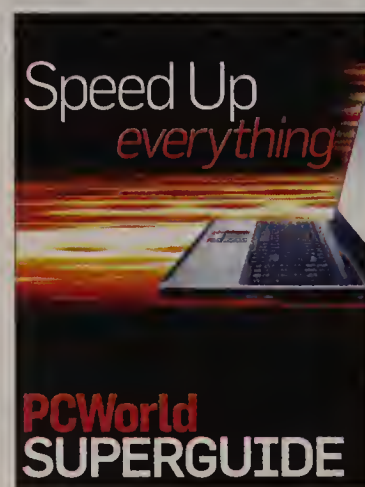
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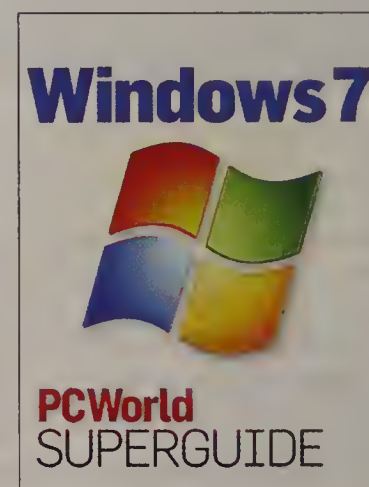
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Security Alert

Enhance Your Privacy on Facebook

These three tips will help you adjust your settings for maximum control over your visible profile on the social network.

BY ALEX WAWRO

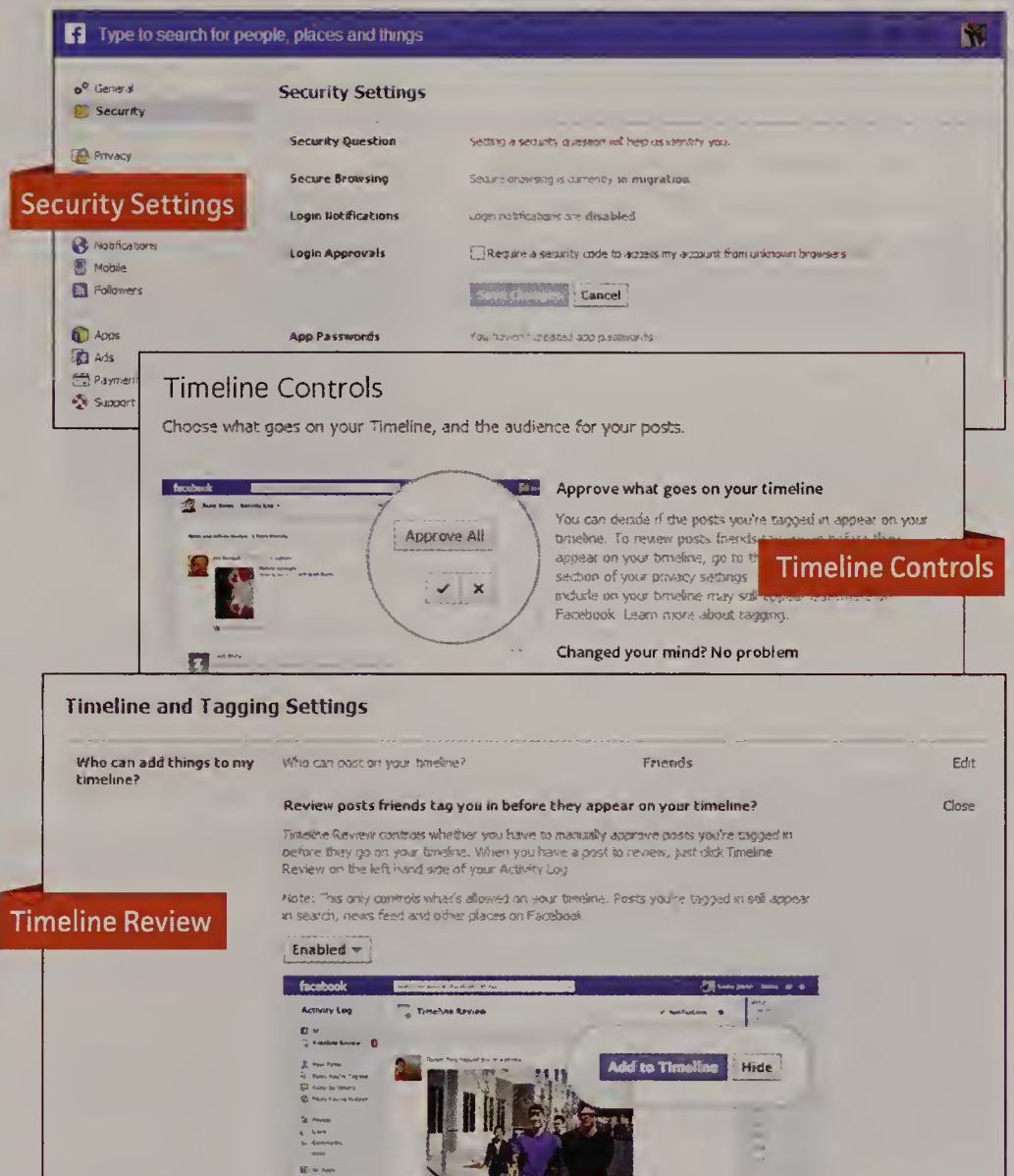
CONFESSION TIME: I'm an inveterate social media junkie. From Facebook to Instagram to Diaspora, whenever a new communication platform rolls around—or comes back around—I'm ready to leap aboard and start sharing.

But social networks are amazing and terrifying in equal measure. You can reach thousands of people worldwide with a single Twitter update, but cybercriminals can use the same tools to pick the perfect victim.

It's impossible to remain completely anonymous while you're using social media—and after all, anonymity would defeat the whole point—but every network has a few key, commonly overlooked privacy settings that take only minutes to set up and drastically improve the security of your shared data.

Although Facebook revolutionized the way we communicate, the site also spawned the Facebook Fret: that uncomfortable moment before every blind date, extended-family gathering, and job interview when you worry about whether anyone has noticed the embarrassing Christmas-party video your friend tagged you in on Facebook a few years back.

This article focuses on the three most important privacy settings you should be using, but probably aren't, on Facebook. Five minutes of setup now could help you avert hours of social embarrassment and identity recovery down the road. (For similar coverage of crucial privacy settings on Twitter, Google+, and Instagram, see go.pcworld.com/safenet.)



Limit who can find you: Stop worrying and make sure that your Facebook profile stays private by clicking the blue gear in the top-right corner of the Facebook website and selecting *Privacy Settings*. From there, the best thing you can do is to make it harder for strangers to find your Facebook profile in the first place, by blocking search engines from linking to your profile and by limiting who can look up your profile using the email address and phone number you gave to Facebook.

Limiting access to 'Friends' ensures that only people that you've already made a connection with will be able to search for you using your email address and phone number. But since people aren't likely to search Facebook in that manner unless they specifically want to get in touch with someone, it's probably a good idea to grant lookup access to 'Friends of Friends'. That way, you can get some mileage out of Facebook's social network by connecting with people that your friends trust.

Facebook has put together a commendably informative Privacy Settings menu that you can use to limit your visibility in third-party searches, make your past posts private, and more.

Stop posting in public: Your next stop on the Facebook »

Privacy Settings to-do list is the 'Who can see my stuff?' section of the Privacy Settings menu. Set the 'Who can see your future posts?' option to *Friends*.

Facebook lets you change content visibility on a post-by-post basis. You can, for example, create status updates that are publicly available or visible only to two or three specific people. But the smartest choice is to make post visibility friends-only by default, mitigating the damage of potentially humiliating photos you might upload after a late-night escapade.

To privatize your Facebook profile retroactively, click the *Limit Past Posts* link and then the *Limit Old Posts* button. This action ensures that all of the content you've already shared becomes available to only your friends. One caveat, though: If you ever tag anyone in a Facebook update, your tagged content will appear on that person's Timeline, and thus will be exposed according to the personal privacy settings of that individual.

Lock down your Timeline: Finally, take a moment to safeguard against the threat of embarrassing photos or video popping up in your Timeline without your knowledge by fine-tuning Facebook's Timeline Review.

Go to the 'Timeline and Tagging Settings' menu (if you're still in Privacy Settings, you can find the other settings menus on the left side of the screen). Once you're in a position to review your Timeline Settings, scroll down the list of options and turn the one titled 'Review posts friends tag you in before they appear on your timeline' to *On*.

The three simple changes described above will go a long way toward improving your Facebook privacy, but a bunch of other potentially useful privacy settings are scattered throughout Facebook's Account Settings menus. Take the time to read through them. Facebook is one of the biggest social networks on the planet, and knowing how to control your information is the best way to control how the world views you.

BUGS & FIXES

IE 8 Flaw a Good Reason to Upgrade



NICK MEDIATI

Plus: Fixes for Adobe Reader and Flash Player, and a Safari for Mac update.

ONE THEME IN security is to update your software early and often—and this month's bug roundup is no exception. In this installment, learn about a bug affecting an old version of Internet Explorer, various fixes for Adobe products, and a security enhancement for Safari.

Internet Explorer 8 Bug Belatedly Emerges

A recently discovered flaw in IE 8 could allow a remote attacker to run arbitrary code (such as malware) on your PC if you visit a specially crafted malicious website. According to Microsoft, attackers send links to the malicious sites via email or instant message. IE 9 and 10 aren't affected by this issue, so the easiest fix is to upgrade to the latest version of Microsoft's browser. Visit go.pcworld.com/ie81 and go.pcworld.com/ie82 for all the details.

Fixes for Adobe Reader, Flash

McAfee researchers found a flaw affecting Adobe Reader that may allow other people to see when you opened a PDF file. McAfee doesn't consider this issue to be a major security hole, but it can compromise your privacy somewhat. The problem affects all versions of Reader, but a patch may be available by the time you read this. Visit go.pcworld.com/adobe1305 and go.pcworld.com/adobe1306 to get the technical nitty-gritty on this bug.

A recently released patch for Adobe Flash Player corrects several weaknesses that could allow an attacker to run arbitrary code on your computer and effectively control your machine. These bugs affect versions of Flash Player for Windows, Mac OS X, and Linux, and various versions of Android. Grab the latest version of Flash Player at go.pcworld.com/adobe1307, and head over to go.pcworld.com/adobe1308 if you want to learn more.

Safari 6.0.4 and 5.1.9 Security Updates

The Safari 6.0.4 and 5.1.9 updates for Mac OS X add a new level of security to help protect against malicious Java applets. With these updates installed, Safari will warn you when a webpage wants to run a Java applet, and will ask you whether to block the applet or allow it to run. You can also configure Java settings site-by-site, allowing Java applets to run on some sites, requiring the browser to ask you on others, and blocking Java entirely on yet others. To learn more about these updates, visit go.pcworld.com/safari1301.



VIAGRA
(sildenafil citrate) tablets

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For more information go to viagra.com or call 1-888-484-2472 (1-888-4VIAGRA).

VIAGRA is prescription medication to treat erectile dysfunction (ED). If you don't have a prescription, talk to your doctor to see if VIAGRA is right for you.

IMPORTANT SAFETY INFORMATION BELOW.

Do not take VIAGRA if you take nitrates, often prescribed for chest pain, as this may cause a sudden, unsafe drop in blood pressure.

Discuss your general health status with your doctor to ensure that you are healthy enough to engage in sexual activity. If you experience chest pain, nausea, or any other discomforts during sex, seek immediate medical help.

In the rare event of an erection lasting more than 4 hours, seek immediate medical help to avoid long-term injury.

If you are older than age 65, or have serious liver or kidney problems, your doctor may start you at the lowest dose (25 mg) of VIAGRA. If you are taking protease inhibitors, such as for the treatment of HIV, your doctor may recommend a 25-mg dose and may limit you to a maximum single dose of 25 mg of VIAGRA in a 48-hour period. If you have prostate problems or high blood pressure for which you take medicines called alpha blockers, your doctor may start you on a lower dose of VIAGRA.

In rare instances, men taking PDE5 inhibitors (oral erectile dysfunction medicines, including VIAGRA) reported a sudden decrease or loss of vision or hearing. It is not possible to determine whether these events are related directly to these medicines or to other factors. If you experience sudden decrease or loss of vision or hearing, stop taking PDE5 inhibitors, including VIAGRA, and call a doctor right away.

VIAGRA should not be used with other ED treatments. VIAGRA should not be used with REVATIO or other products containing sildenafil.

VIAGRA does not protect against sexually transmitted diseases, including HIV.

The most common side effects of VIAGRA are headache, facial flushing, and upset stomach. Less commonly, bluish vision, blurred vision, or sensitivity to light may briefly occur.

Please see Important Facts for VIAGRA on the following page or visit viagra.com for full prescribing information.

*There might be an additional shipping and handling surcharge to ship orders outside the 48 contiguous states.

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.FDA.gov/medwatch or call 1-800-FDA-1088.

The blue diamond tablet shape is a registered trademark of Pfizer Inc.

IMPORTANT FACTS



VIAGRA[®]
(sildenafil citrate) tablets

(vi-AG-rah)

IMPORTANT SAFETY INFORMATION ABOUT VIAGRA

Never take VIAGRA if you take any medicines with nitrates. This includes nitroglycerin. Your blood pressure could drop quickly. It could fall to an unsafe or life-threatening level.

ABOUT ERECTILE DYSFUNCTION (ED)

Erectile dysfunction means a man cannot get or keep an erection. Health problems, injury, or side effects of drugs may cause ED. The cause may not be known.

ABOUT VIAGRA

VIAGRA is used to treat ED in men. When you want to have sex, VIAGRA can help you get and keep an erection when you are sexually excited. You cannot get an erection just by taking the pill. Only your doctor can prescribe VIAGRA.

VIAGRA does not cure ED.

VIAGRA does not protect you or your partner from STDs (sexually transmitted diseases) or HIV. You will need to use a condom.

VIAGRA is not a hormone or an aphrodisiac.

WHO IS VIAGRA FOR?

Who should take VIAGRA?

Men who have ED and whose heart is healthy enough for sex.

Who should NOT take VIAGRA?

- If you ever take medicines with nitrates:
 - Medicines that treat chest pain (angina), such as nitroglycerin or isosorbide mononitrate or dinitrate
- If you use some street drugs, such as “poppers” (amyl nitrate or nitrite)
- If you are allergic to anything in the VIAGRA tablet

BEFORE YOU START VIAGRA

Tell your doctor if you have or ever had:

- Heart attack, abnormal heartbeats, or stroke
- Heart problems, such as heart failure, chest pain, angina, or aortic valve narrowing
- Low or high blood pressure
- Severe vision loss
- An eye condition called retinitis pigmentosa
- Kidney or liver problems
- Blood problems, such as sickle cell anemia or leukemia
- A deformed penis, Peyronie’s disease, or an erection that lasted more than 4 hours
- Stomach ulcers or any kind of bleeding problems

Tell your doctor about all your medicines. Include over-the-counter medicines, vitamins, and herbal products. Tell your doctor if you take or use:

- Medicines called alpha-blockers to treat high blood pressure or prostate problems. Your blood pressure could suddenly get too low. You could get dizzy or faint. Your doctor may start you on a lower dose of VIAGRA.
- Medicines called protease inhibitors for HIV. Your doctor may prescribe a 25 mg dose. Your doctor may limit VIAGRA to 25 mg in a 48-hour period.
- Other methods to cause erections. These include pills, injections, implants, or pumps.
- A medicine called REVATIO. VIAGRA should not be used with REVATIO as REVATIO contains sildenafil, the same medicine found in VIAGRA.

POSSIBLE SIDE EFFECTS OF VIAGRA

Side effects are mostly mild to moderate. They usually go away after a few hours. Some of these are more likely to happen with higher doses.

The most common side effects are:

- Headache
- Feeling flushed
- Upset stomach

Less common side effects are:

- Trouble telling blue and green apart or seeing a blue tinge on things
- Eyes being more sensitive to light
- Blurred vision

Rarely, a small number of men taking VIAGRA have reported these serious events:

- Having an erection that lasts more than 4 hours. If the erection is not treated right away, long-term loss of potency could occur.
- Sudden decrease or loss of sight in one or both eyes. We do not know if these events are caused by VIAGRA and medicines like it or caused by other factors. They may be caused by conditions like high blood pressure or diabetes. If you have sudden vision changes, stop using VIAGRA and all medicines like it. Call your doctor right away.
- Sudden decrease or loss of hearing. We do not know if these events are caused by VIAGRA and medicines like it or caused by other factors. If you have sudden hearing changes, stop using VIAGRA and all medicines like it. Call your doctor right away.
- Heart attack, stroke, irregular heartbeats, and death. We do not know whether these events are caused by VIAGRA or caused by other factors. Most of these happened in men who already had heart problems.

If you have any of these problems, stop VIAGRA. Call your doctor right away.

HOW TO TAKE VIAGRA

Do:

- Take VIAGRA only the way your doctor tells you. VIAGRA comes in 25 mg, 50 mg, and 100 mg tablets. Your doctor will tell you how much to take.
- If you are over 65 or have serious liver or kidney problems, your doctor may start you at the lowest dose (25 mg).
- Take VIAGRA about 1 hour before you want to have sex. VIAGRA starts to work in about 30 minutes when you are sexually excited. VIAGRA lasts up to 4 hours.

Don’t:

- Do not take VIAGRA more than once a day.
- Do not take more VIAGRA than your doctor tells you. If you think you need more VIAGRA, talk with your doctor.
- Do not start or stop any other medicines before checking with your doctor.

NEED MORE INFORMATION?

- This is only a summary of important information. Ask your doctor or pharmacist for complete product information OR
- Go to www.viagra.com or call (888) 4-VIAGRA (484-2472).



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Facebook Tool Uses Friends to Restore Access



FACEBOOK HAS announced a new security tool called Trusted Contacts for users who suspect they've been hacked. Trusted Contacts lets you specify three to five

Facebook friends to help you regain account access. If a security breach occurs, each friend gets a code that you must enter to unlock your account. It's basically an alternative to answering numerous security questions to prove your identity.

To recover an account, you'll need security codes from three contacts, so Facebook recommends choosing friends who are both trustworthy and easy to reach by phone or in person.

After you set up Trusted Contacts, each friend will receive a notification from Facebook, letting them know that they should be ready to help.

Too Complicated?

It's a nice gesture, but most users are unlikely to bother with setting it up unless Facebook starts asking for Trusted Contact details when users log in.

Regardless, users concerned about security would be better served by setting up Login Approvals, also known as two-factor authentication. The feature prevents access on unrecognized devices by requiring a security code that Facebook sends to your phone. Microsoft, Twitter, and other companies have begun offering such authentication as more users and organizations fall victim to hack attacks. (See *Privacy Watch* to the right.)

Although Facebook says that Trusted Contacts is available now, the link was not working as this issue went to press. You should be able to add Trusted Contacts through Facebook's Security Settings page.—Jared Newman

PRIVACY WATCH

Two-Factor Authentication Is Here

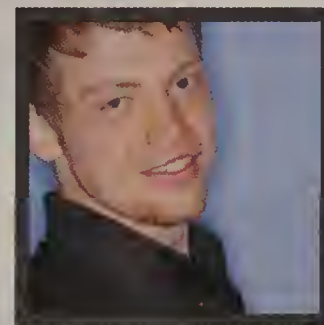
A straightforward but rigorous system promotes online account security.

TWO-FACTOR AUTHENTICATION may not be as sexy as the latest Android phone, but it is capturing news headlines, and deservedly so. Microsoft recently began rolling out this security tool for its some 700 million Microsoft Account users. And *Wired* reports that Twitter is working on two-factor authentication as well.

The security feature could have stopped hackers at the gate before they seized control of the Associated Press Twitter account, and you should be using it to protect your own online accounts, wherever it's available.

In a nutshell, two-factor authentication requires not one but two pieces of privileged information before granting access to an online account.

Let's say you've set up two-factor authentication for your Google account, and now a hacker halfway around the world is trying to break into your Gmail. He has your email address and even your password, but not the second element of the authentication process: a unique security code that Google sends directly to your cell phone via text messaging.



ALEX WAWRO

The Trouble With Authentication

Two-factor authentication requires something you've committed to memory (your password) and something you have in your pocket (your phone).

This authentication system is kind of a pain. Turning the feature on is an

easy way to make life harder for yourself, as you'll need to spend extra time to prove your identity whenever you log in to a protected account from a new piece of hardware. However, this level of authentication makes it much harder for hackers to seize control of your accounts.

Getting started also requires a little legwork on your part. Most major sites and services offer two-factor authentication as a security option, so you'll have to log in to your various accounts and then rummage around in the security settings to find it.



Google and Facebook have offered two-factor authentication as an optional security measure since 2011. Dropbox started offering it last year, and Apple iCloud got two-factor authentication in March. Microsoft is late to the party but now has it, and Twitter's version of the technology can't come too soon.

For a step-by-step description of how to set up two-factor authentication on Google and Facebook, and for your Microsoft account, see go.pcworld.com/twofactor. You should duplicate this process across every site and service you use that offers two-factor authentication. ●

Reviews & Ratings

Upgrade Your Network With a Backup-Ready, Streaming NAS Box

We tested four reasonably priced network-attached storage devices for your home network. Here's how they performed.

BY JON L. JACOBI

IF YOUR HOME network lacks a NAS box, you're missing out on two counts: First, network-attached storage (NAS) is the easiest way to back up connected PCs. Second, a NAS box can store your media libraries and stream files to any PC or networked audio device in your house. You can also stream movies to your TV if you have a streaming box or home-theater PC connected to it. Better NAS boxes make remote access possible, enabling you to access your content from—and stream your media to—any device anywhere you have Internet access. You needn't pay big

bucks for an expensive multi-bay model, either. One caveat: Though single-bay NAS boxes are cost effective, they provide no data redundancy. If you store anything that you can't afford to lose or can't re-create, back them up.

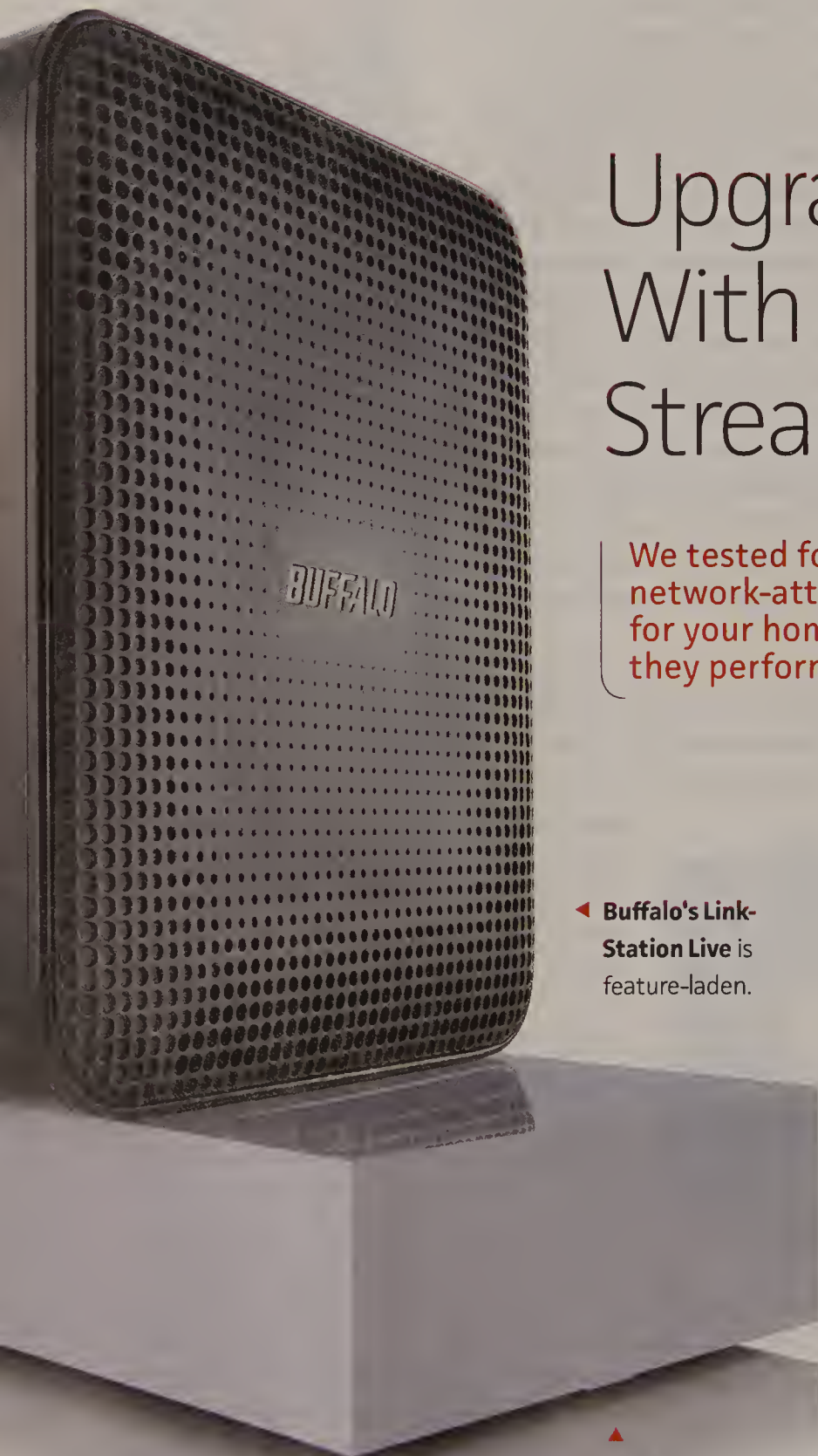
The Contenders

We put out a call for reasonably priced (\$200 or less) NAS boxes that provide at least 1TB of storage, support remote access via the Web, and can act as both iTunes- and DLNA-certified media servers. Four vendors stepped up: Buffalo Technology with its LinkStation Live; LaCie with its CloudBox; Seagate with its Central; and Western Digital with its My Book Live.

These models' hardware configurations turned out to be surprisingly similar: Each box uses a 3.5-inch mechanical hard drive, a gigabit eth-

◀ Buffalo's LinkStation Live is feature-laden.

▲ LaCie's CloudBox was the prettiest NAS box.

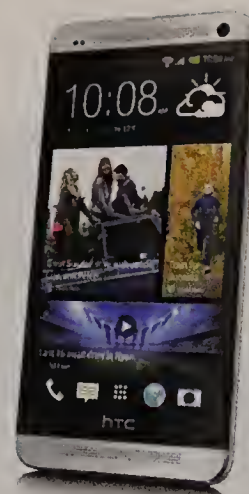




50 Budget Graphics Cards



52 Logitech BCC950



54 HTC One

ernet interface, and an external AC adapter. But they had widely different features on top of the hardware.

Buffalo LinkStation Live

This \$140 NAS box is a capable media streamer with the best feature set of the four we looked at. But it lagged in copying files, its UI was slow, and many of its features were unintuitive to configure.

The 2TB LinkStation Live delivers shared folders, user accounts, workgroup and domain support, AFP and FTP file sharing, and iTunes- and DLNA-certified media servers. You also get BitTorrent downloading, integrated Eye-Fi service (so you can copy photos from your camera to your networked storage using Wi-Fi), Flickr integration, NovaBackup (for backing up PCs to the box), an on-board routine to back up its files to other locations, and remote access via BuffaloNas.com.

Buffalo's NAS box was the second fastest in our roundup at handling a 10GB mix of files and folders, writing them at 17.5 MBps and reading them at 29.9 MBps, but its perfor-

Seagate's Central is silent due to its passive cooling system.

mance with our large 10GB file fell below the curve, writing that file at 22.7 MBps and reading it at 49.1 MBps. That's 10 MBps slower than the performance of the next-slowest drive. The Buffalo box did stream nicely, though, spooling our 40-mbps, 1080p files to three PCs without a hitch. It was also the only box that transcoded MKV files on the fly, so they would play in Windows Media Player via DLNA.

In setup and configuration, the LinkStation Live was the least user-friendly box we tested. But it lacks nothing in features, and streams nicely.

LaCie CloudBox

The 2TB LaCie CloudBox is a shiny white, Neil Poulton-designed NAS box. It can be tricky to configure for remote access, but it comes with top-notch features, offers good all-around performance, and carries a moderate price of \$150.

It runs the full version of LaCie's Dashboard operating system. In addition to fea-

tures such as user and shared folders, FTP, and workgroup, you get a BitTorrent client and a full browser-based file manager. It also ties with Western Digital's My Book Live for best backup features, with a version of Genie Timeline for the PC, Intego for the Mac, and box-to-box backup via rsync.

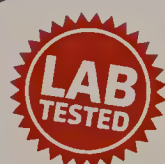
The CloudBox performed well in our tests. The DLNA and iTunes servers functioned perfectly, and the unit effortlessly streamed our 40-mbps video to three PCs simultaneously. The LaCie's file-transfer performance was very good, and it took first place on the task of reading our 10GB mix of files and folders, with a speed of 33.7 MBps. It wrote those files at 16.5 MBps, and

it wrote and read our single 10GB file at 31.6 MBps and 63.5 MBps, respectively.

LaCie provides dedicated remote-access apps for iOS and Android devices, but not for Windows Phone 7 or 8. The app isn't as attractive as Seagate's Dashboard OS, but it does the job. LaCie is also unique in offering a free 10GB/one-year subscription to its Wuala online storage service. Add that to the BitTorrent client, plus good performance and looks, and you have an attractive deal.

Seagate Central

This is the big easy of NAS boxes. All you have to do to >>



Tested in PCWorld Labs

Products reviewed in this section—both hardware and software—have been tested by the editors. Hardware goes through a formal, rigorous testing procedure in our lab.



Western Digital's My Book Live was our favorite.

set it up for remote access is to surf to the unit's configuration page; enter your name, email address, and password; and then respond to an email message that links to a create-an-account page. Your name becomes your local network login, your email is your remote login name, and your password works for both.

You can use the included Dashboard software to open the configuration page, or you can manually surf to the unit's URL. Remote access is via the SeagateMedia app for iOS, Android, and Kindle, or a Tappin-powered website

Western Digital's My Book Live NAS box delivered the best combination of low price, performance, features, and ease of setup and use.

where you can play and share your files.

Thanks to its fine mesh lid and perforated base, the unit sheds heat without needing a fan. Its near-silent convection cooling and its quiet drive mean that you can plop it next to your home-theater setup. But its retro look may not be welcome in your living room.

Priced at \$170, the 2TB Central is also the only unit in this roundup that comes with a USB port. Seagate has developed a simple user interface for it, too. One feature allows you to back up any pictures

posted to your Facebook account—but that's it for frills. Though the Dashboard software backs up PCs to the box, it doesn't provide any means to back up the box itself. That's a major omission for a single-bay NAS box.

The Central performed well in our tests. It streamed our large 40-mbps video file simultaneously to three PCs, without a hiccup; and it was the only unit that served up Ogg Theora video. File-transfer speeds were very good for its price: 16.9 MBps while writing our 10GB mix of files and folders, and 20.1 MBps while read-

ing them. The Central did even better with our 10GB file, writing it at a roundup-best speed of 40.3 MBps and reading it at 75.2 MBps.

Convenient setup and quiet streaming make the Seagate Central a good fit for A/V systems. But we wish Seagate had given it an on-board self-backup capability, BitTorrent support, and the ability to interface to more social sites.

Western Digital My Book Live

This NAS box isn't spectacular in any particular area. But taken as a whole, it achieves the best balance of performance, features, and price (\$140) in the roundup.

The My Book Live, like other NAS boxes, is accessible over a local network without any configuration—just plug it into your router. But it also has useful shares (publicly shared folders) that make life easier. There's a public share, with music, picture, and video subfolders; and there are shares dedicated to backups (including Time Machine Backup and WD's own bundled SmartWare). For backing up the box itself, WD provides an on-board routine that creates "safepoints." WD supports most video codecs—except for Ogg Theora—and the My Book Live's streaming performance was smooth as silk. This was the only drive of the four that transcoded

FLAC files for playback on a client PC running iTunes.

It performed extremely well overall, though it struggled more than the other three when reading our 10GB mix of files and folders, delivering throughput of just 16.4 MBps. But it was faster than any other box when writing the same files, clocking in at 26.9 MBps. It also excelled at handling the single 10GB file, writing it at 32.4 MBps and reading it at 77.1 MBps.

My Book Live has the best app coverage of any of the drives we tested, with versions of its WD2go media player for iOS, Android, and Windows Phone 7.

Bottom Line

Seagate Central's superquiet operation, speed, and USB port make it a good fit for an A/V setup, though it could have adopted a more modern look. Buffalo's LinkStation Live is a viable media streamer, but it lagged behind in file copy performance and ease of configuration. LaCie's CloudBox performed well, has a nice feature set, and is a strong product at a nice price. In the end, however, Western Digital's My Book Live delivered the best combination of low price, performance, features, and ease of setup and use. That earned it the extra half-point it needed to capture the top spot.

MORE ONLINE

For complete reviews of these four NAS boxes, see go.pcworld.com/nasboxroundup.

Lenovo's Ideapad Y500 Offers Great Gaming Specs

AT FIRST GLANCE, Lenovo's IdeaPad Y500 doesn't look like anything special. This thick, heavy (6.2 pounds), 15.6-inch laptop is encased in a plain, sturdy chassis with a brushed-aluminum cover. It sports a sleek look, but has a tendency to attract fingerprints.

Good Gaming Machine

Nothing obvious about the Y500 hints that it is a rather powerful—yet surprisingly affordable—gaming-oriented laptop with a third-generation Intel Core i7 processor, 16GB of RAM, and not one but two Nvidia GeForce GT 650M graphics cards under the hood. Our review model—configured with a 1TB hard drive, a 16GB SSD boot drive, a glossy full HD display, and a full-size backlit keyboard with ten-key numberpad—starts at around \$1100. That makes it a bit more expensive than Lenovo's \$800 base model, but it still has a great price for a gaming laptop.

On the performance front, the Y500 handled itself well, though it can't quite hold its own with the more gaming-intensive models. It received a score of 70 out of 100 on our WorldBench 8 benchmark tests, which puts it well above most mainstream laptops, but still below behemoths such as the \$3785 Origin EON17-SLX (which scored 115 out of 100). Still, the Y500 is one of the better laptops we've tested, and its graphics performance is comparable to that of the EON17-SLX. In our Dirt

Showdown graphics test, the Y500 turned in a frame rate of 116.1 frames per second, while the Origin EON17-SLX managed 139.5 fps. In other words: If you're a gamer, this is a viable (and much more affordable) alternative to an Origin desktop replacement.

The Y500 offers sturdily built, comfortable components. The full-size keyboard has Chiclet-style, red-rimmed keys set against a shiny black background. The keyboard is extremely comfortable to type on, with great tactile feedback and nice, evenly spaced keys. The red backlight gives it a pop of color, though I have one minor complaint as a gamer: The keys are so evenly spaced (and the numberpad is

The Y500 is an affordable laptop with solid performance.

right next to the keyboard) that a multi-color backlight would be helpful. It's hard to distinguish where keys are, quickly, with an all-red keyboard.

The Y500's touchpad is large and easy to use, but most owners won't care. This is a gaming machine, which means you're most likely going to use an external mouse with it. The touchpad was a tad jumpy and over-

sensitive, in my opinion, but you can disable it with a quick function keystroke.

Great-Looking Display, but No Touch?

The Y500's screen is one of its biggest assets—even though when you tap it (and you will; this is Windows 8, after all), you'll discover that it's not a touchscreen. But the screen itself looks great: It's big, bright, and crisp; colors look accurate; and off-axis viewing

and touchscreens aren't the gamer's instrument of choice. But since the Y500 runs Windows 8, it's a bit frustrating to realize that you can't take advantage of all of the awesome swipe gestures that Windows 8 has to offer. That said, it's important to remember that the uber-pricey Origin EON17-SLX doesn't have a touchscreen either.

The Lenovo IdeaPad Y500 is a great choice as a gaming laptop that's lighter and less



angles are pretty good. It has a full HD resolution of 1920 by 1080 pixels, and high-motion content looks excellent in playback. But it's still not a touchscreen. Of course, this isn't quite as big of a deal for its intended audience because it's a gaming machine,

expensive than a typical desktop-replacement monstrosity. Though it has a few minor drawbacks, overall the Y500 is a great machine that offers fine performance and specs for the price.—Sarah Jacobsson Purewal ★★★★★; \$1100 (lowest price); Lenovo; go.pcworld.com/ideapady500

Asus VivoTab Smart: A Windows 8 Hybrid Tablet

WINDOWS 8 TABLETS have yet to find their niche. It's difficult, after all, to be more expensive than Apple's ever-cool iPad, yet less usable than an inexpensive laptop.

The Asus VivoTab Smart, however—a slim little 10.1-inch tablet with a Clover Trail processor—is relatively cheap. It starts at just \$499, and that includes 64GB of built-in storage. It also runs the full version of Windows 8, which means you don't have to settle for Windows RT.

But compare it to a low-powered Ultrabook, and it's toast, though it's moderately powerful for a tablet. Battery life is good and long—7 hours, 36 minutes in our tests.

The \$499 price tag doesn't include the VivoTab's accessories: a Smart Cover—esque magnetic screen protector that folds into a stand, and a separate Bluetooth keyboard and touchpad. Those extras cost an additional \$130.

The VivoTab has a solid polycarbonate back in white,



Asus's VivoTab Smart has a screen protector and stand.

black, or red, plus a 10.1-inch touchscreen. With a maximum thickness of about 0.38 inch, it weighs a mere 1.28 pounds, and the accessories add little weight or thickness.

Ports and slots are pretty limited—it is a tablet, of course—but it offers Wi-Fi (802.11b/g/n), Bluetooth 4.0,

and an NFC chip. The screen has excellent off-axis viewing angles but lacks brightness.

The VivoTab Smart is both extremely portable and very usable, and the full Windows 8 OS is a welcome bonus.

—Sarah Jacobsson Purewal
★★★★☆; \$499; Asus;
go.pcworld.com/vivotab

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Lenovo IdeaPad Yoga 11: Convertible, Portable

LENOVO'S \$799 IDEAPAD Yoga 11 is much more of a laptop than some of its competitors that have detachable keyboard docks. The Yoga 11's keyboard doesn't detach, but you can flip the screen around 360 degrees.

However, it runs a tablet operating system, Windows RT. This means you can't download a third-party browser or install some older programs. You're limited to apps that are downloadable from the Windows Store (and Windows 8 app development has slowed in recent months).

All pretty unfortunate, since the Yoga 11 is an otherwise well-made product.

With a native resolution of 1366 by 768 pixels, the Yoga 11's 11.6-inch capacitive touchscreen offers bright, crisp colors. The screen is accurate, smooth, and as similar to a tablet experience as you'll get on a laptop.

The Yoga 11's biggest advantage over other laptop-tablet hybrids is the built-in keyboard—it's a really good one, with island-style keys and a small glass touchpad.

Battery life is great, too: In

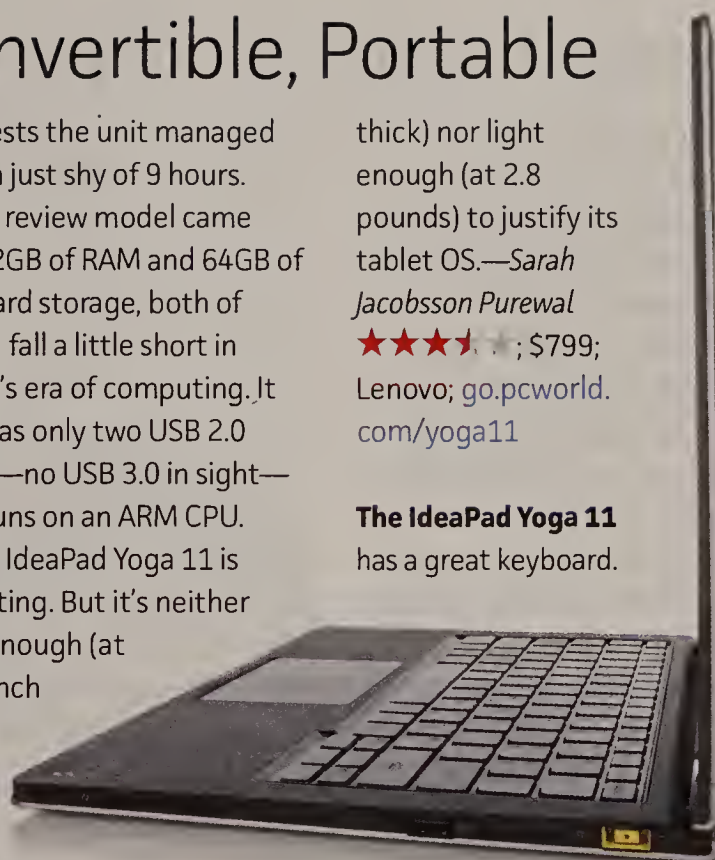
our tests the unit managed to run just shy of 9 hours.

Our review model came with 2GB of RAM and 64GB of onboard storage, both of which fall a little short in today's era of computing. It also has only two USB 2.0 ports—no USB 3.0 in sight—and runs on an ARM CPU.

The IdeaPad Yoga 11 is tempting. But it's neither thin enough (at 0.61 inch

thick) nor light enough (at 2.8 pounds) to justify its tablet OS.—*Sarah Jacobsson Purewal*
★★★★☆; \$799; [Lenovo; go.pcworld.com/yoga11](http://Lenovo.go.pcworld.com/yoga11)

The IdeaPad Yoga 11 has a great keyboard.



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BR5268

Nexia Home Intelligence System Disappoints

SIMILAR TO LOWES'S Iris system (go.pcworld.com/irissmartkit), Ingersoll Rand's Nexia Home Intelligence is a self-monitored home-control system with a supposedly optional monthly subscription fee for remote access and programming. (Neither system is of much use if you can't manage it via the cloud from a PC or mobile device.) A Nexia subscription costs \$9 per month, or \$99 per year.

You can purchase various starter packs, all of which include a Z-Wave-to-ethernet bridge, and then add other components to expand the system's capabilities. I evaluated the \$299 Home Security Kit (which consists of a Z-Wave

bridge, a Z-Wave appliance module, and the original keypad deadbolt model).

To augment its starter kit, the company sent me a door/window sensor (\$40) and its new touchscreen deadbolt (\$200); I tacked on a wireless indoor camera (\$179).

You can add other components such as programmable thermostats, motion sensors, lever entry locks, plug-in dimmer modules for lamps, and an outdoor camera with infrared night vision.

Installation

Installing the Nexia system isn't quite as easy as setting up the dead-simple Lowes Iris system. If you prefer, you can hire a certified installer.

The bridge's ability to run on battery power makes enrolling devices such as door locks much easier, because

you can take the bridge to each device. Z-Wave transmitters are low-power devices by design, so the bridge must be within fairly close proximity to a lock, sensor, or lighting control in order to enroll it. If you have a large Z-Wave network, as I do, you can choose to enroll all of your hardware (one device at a time) and upload the entire routing table to the cloud at once.

The System

The original keypad deadbolt (\$200 if purchased separately) is attractive, with ten illuminated number buttons. But since the lock doesn't have a motorized bolt, you must enter a code to activate it and then twist its knob to withdraw or insert the bolt.

You can assign up to 19 four-digit user codes, establish recurring codes to grant access only during a time window (useful for admitting a housekeeping service, for instance), and create one-time-use codes. You can also remotely grant someone access by logging in to your Nexia account and sending a command via the Internet.

The chief benefit of not having a motorized bolt is longer battery life. The main drawback is that the deadbolt can't lock itself, so you must rely on your approved visitors to twist the knob to lock the door when they leave. Should the battery die, you can lock and unlock the deadbolt with a key.

Schlage's new Touchscreen

Deadbolt with Built-in Alarm (also \$200) has a programmable sensor that can sound a local alarm and send a message to the Nexia bridge if the lock is tampered with.

A basic Nexia service plan includes 75MB of online video storage and 4 hours of playback time per month. You can also download video clips to local storage (useful for providing forensic evidence to law enforcement in the event of a break-in).

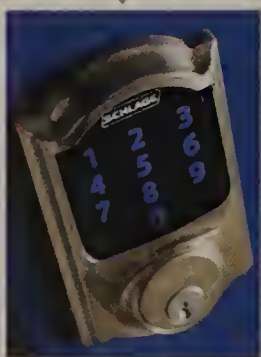
The Nexia Home Intelligence Web portal lists your home-control devices in a column on the left. Tabs for other user-interface screens appear across the top.

You create home-control rules under the Automation tab. The rules employ the logic of "If this happens, do this, and then do that *N* number of minutes later."

You can program the thermostat to heat or cool your house, as well, and you can set lights to turn on and off according to a schedule.

Nexia provides apps for nearly every mobile platform, and you can program the system to send alerts to multiple email addresses and phone numbers.

Nexia is a better home-control system than it is a home-security system. If you are interested in home control, Nexia is good, but Iris is preferable.—*Michael Brown* ★★½; \$299 (basic kit), \$99 per year (subscription); Ingersoll Rand; go.pcworld.com/nexia



This is **Richard**. He knows it's his job to teach his son **Scotty** what this whole gaming thing is about. The age rating helps him **pick the right games**, but being a good dad means he always wants to know more.

That's exactly what the **ESRB's rating summaries** are for.

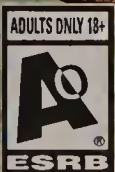
Search for a game's rating summary at **ESRB.org**.

Rich H.

Lafayette, IN



ENTERTAINMENT SOFTWARE
RATING BOARD



Lenovo's ThinkCentre Edge 92z: Good for Work and Play

THE HANDSOME LENOVO ThinkCentre Edge 92z all-in-one has a 21.5-inch, ten-point touchscreen and Windows 8, plus business features such as Microsoft Lync-qualified VoIP. Pick the discrete graphics option (available only from resellers such as Amazon, Best Buy, and Newegg), and you get a pretty good gaming system, too. The base price is \$1099, but various options can push that higher.

The Edge 92z is thin and quite light for an all-in-one.

That's important if you plan to use the unit's VESA mount point and attach it to an articulated arm. (Lenovo's ThinkCentre Extend Arm, which clamps to your desk-top, costs \$90.)

The mouse and keyboard are of the wired USB variety. Consumers will likely prefer wireless peripherals, a \$39 option from Lenovo.

The 92z sports two USB 3.0 ports and a card reader on the left side, where they're easily reachable. Four USB 2.0

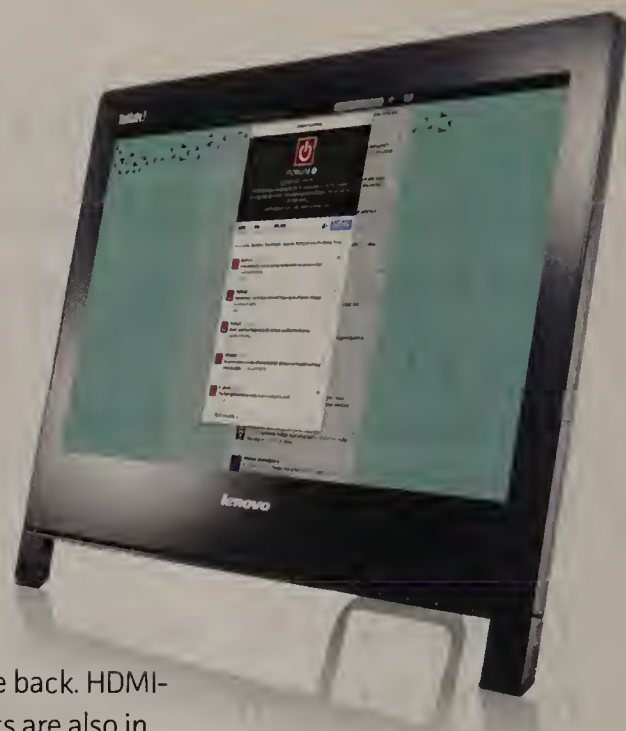
Lenovo's ThinkCentre Edge is thin and light.

ports are on the back. HDMI-in and -out ports are also in back, along with a gigabit ethernet port. The right side has a DVD burner (no Blu-ray).

The unit we tested (model 3414) carried an Intel Core i5-3470S processor; 4GB of DDR3-1600 memory; a 500GB, 7200-rpm Seagate hard drive; and a discrete

Radeon HD 7650A graphics card. The system delivered a Desktop WorldBench 8.1 score of 67 (based on a 100-point scale), good for an all-in-one.—*Jon L. Jacobi*

★★★★☆; \$1099; Lenovo; go.pcworld.com/edge92z



PHOTOGRAPH: ROBERT CARDIN

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xNo

✓Yes

✓Yes

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Acer's Predator Is Relatively Toothless

ACER GOT A few things right and much wrong with the Predator (specifically, model AG3620-UR12). With a 3.4GHz Core i7-3770 CPU (one of Intel's better processors) and 32GB of DDR3-1600 memory, its asking price of \$1299 is very reasonable.

But it also has an AMD Radeon HD 8760 video card (the OEM version of the milque-toast Radeon HD 7770), a chintzy custom motherboard with just one PCIe x16 slot (occupied), and a minuscule 16GB SSD that serves as a

cache to the 2TB, 7200-rpm mechanical hard drive.

Three doors in its face flip down to reveal 5.25-inch drive bays. One is occupied by a 16X DVD burner, and a second has a slide-out tray with SATA power and data connectors in the rear. This isn't a hot-swappable bay, but it provides an opportunity for data backup you can remove.

It also has two empty 3.5-inch drive bays, accessible only from inside the case.

A media-card reader, two USB 3.0 ports, and two USB



The Acer Predator is an above-average family PC.

2.0 ports are on the top of the case. Six more ports—two USB 3.0 and four USB 2.0—are in back. The video card has DVI, HDMI, and full-size DisplayPort connectors (one each), plus antennas for a wireless network adapter card (802.11b/g/n).

Acer pitches this machine as a gaming rig, but hard-core gamers will find it to be weak tea. Otherwise, the Predator is a better-than-average family PC.—*Michael Brown*

★★★★☆; \$1299; Acer; go.pcworld.com/predator

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Three Graphics Cards You Can Afford

WITH THE RIGHT midrange graphics card, you can get your game on.

In fact, AMD and Nvidia are clamoring to place one of their under-\$200 cards in your system. We look at those cards here.

MSI Radeon HD 7790

The Radeon HD 7790 from AMD fills the gap between the 7770 and the 7850 in price and performance, and is a great entry-level choice for budget-conscious PC builders. For \$150 you get 1080p gaming. The 7790 is also the first rival to Nvidia's GTX 650 Ti at the \$150 price level.

MSI's version of the 7790 sports 1GB of GDDR5 memory and a core clock speed of just over 1GHz. For multiple-monitor fanatics, it offers two Dual-Link DVI connectors, an HDMI connector, and a DisplayPort output. Plus, it manages to stay compact for smaller cases, measuring just 7.2 by 4.6 by 1.5 inches.

The 7790 also supports

CrossFire, which means you can add a second card.

EVGA GeForce GTX 650 Ti Boost

A mere week after the 7790 was announced, Nvidia aimed for the graphics card sweet spot as well with its GTX 650 Ti Boost. Though it costs \$170, it offers double the memory of AMD's 7790 (2GB of GDDR5) for just \$30 more.

EVGA's take on the 650 Ti Boost utilizes its overclocking capabilities to deliver core speeds of over 1GHz, and comes with a cooler similar to the one in its bigger sibling, the GTX 660. The Boost also has two DVI ports (one DVI-D and one DVI-I), a mini-HDMI port, and a DisplayPort connection. Unlike the older 650 Ti, the 650 Ti Boost is SLI (Scalable Link Interface) compatible, so you can add a second card later if you want to.

GeForce GTX 650 Ti

The \$137 GeForce GTX 650 Ti was released back in October,

making it an older product at this point. Still, the card provoked direct competition from the Radeon HD 7790.

The 2GB version of the 650 Ti tops out around \$160, making it slightly less pricey than the "boosted" version.

This cheaper card still provides a mini-HDMI port and two DVI ports (one DVI-D and one DVI-I). But you can't add a second card later on, as the 650 Ti is not SLI compatible.

The Benchmarks

In our four game tests, results were all over the map, but the Radeon HD 7790 completely underwhelmed us in Crysis 3. The GTX cards required an adjustment from high- to medium-quality settings, but the 7790 had to drop from medium to low settings to achieve at least 30 to 40 frames per second.

Second revelation: The GeForce GTX 650 Ti Boost doesn't live up to its name. The original 650 Ti barely lags behind its successor, and in

some cases surpasses it.

Under the Unigine Heaven benchmark—a stiff test for graphics cards—the GTX 650 Ti Boost managed to beat out its two competitors, but just barely. The original GeForce GTX 650 Ti kept up with the more-expensive option and blew the cheaper Radeon HD 7790 away.

In our third benchmark, 3DMark, the results jibed with those of our previous benchmarks. The 650 Ti Boost barely beat out the older 650 Ti, while AMD's 7790 brought up the rear with its 1GB deficit.

Bottom Line

All three cards will give you nice value for your dollar, but the one you choose must be calibrated to your wallet and your needs.—Alex Cocilova

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Webcams That Mean Business

IF YOU USE Google Chat, Skype, or a Web-conferencing app with advanced collaboration features, video is likely part of your online meeting toolbox. But the video quality a laptop's integrated webcam delivers can be inadequate for business communications.

The Brother NW-1000 Webcam and the Logitech BCC950 ConferenceCam cost more than a generic webcam, but they can help business conferees see what's going on at the other end of the line.

Brother NW-1000

The high-def (1080p) NW-1000 is optimized to work with Brother's OmniJoin conferencing and collaboration service, though you don't need one to use the other.

The \$99 NW-1000 has a stand for sitting on a table or desk, but the stand can also fold to clip to the top of a monitor or laptop display. It's wider (but at 3.9 by 1.8 by 2.6 inches, no taller or thicker) than most desktop webcams, and it weighs less than 4

ounces. The camera draws power over a USB 2.0 cable, and is easy to transport. It works with Windows XP or later, or Mac OS X 10.5 to 10.8.

The NW-1000 delivers very smooth high-def video, and it can capture and encode video to h.264 or MJPG (Motion JPEG) format at 30 frames per second, with a 71-degree diagonal field of vision and a wide-aspect-ratio frame.

In my tests, the NW-1000 adjusted to ambient lighting well and delivered good depth of field.

Its built-in speaker isn't anything special, but Brother's \$99 VT-1000 USB speakerphone (sold separately) works for VoIP calls or as a smartphone accessory.

Logitech BCC950 ConferenceCam

Designed for tabletop use by a small group of people sitting in a conference room, the \$250 BCC950 ConferenceCam consists of a base with a built-

in speakerphone and a spherical camera unit (slightly larger than a softball) that plugs in to the base via USB 2.0. You can use a stick-like extender to elevate the lens component.



Logitech's BCC950 has advanced teleconferencing features.

speaker, and answer or end video calls.

Plugged into the USB port of a PC (either Windows XP or later, or Mac OS X 10.6 or later), the camera's Carl Zeiss optics deliver 1080p resolution at 30 frames per second with compatible applications. In my tests, the BCC950 adjusted well to ambient lighting, and call recipients reported smooth, clear video. Audio from the speakers was also loud and clear.

The BCC950 supports all major videoconferencing and chat apps (Cisco WebEx, FaceTime, Google Hangouts, Microsoft Lync, and Skype). The webcam requires AC power—Logitech provides 8-foot power and USB cables—which may limit its usefulness in the field.—Yardena Arar

The wireless remote control works at distances of up to 10 feet. The webcam pans 180 degrees and tilts 55 degrees up and down across a 78-degree field of vision. You can also zoom in and out (up to 2X at high-def, and up to 5X at standard definition), adjust audio volume or mute the



Brother's NW-1000 offers high resolution.

★★★★★; \$99; Brother NW-1000
★★★★★; \$250; Logitech BCC950 ConferenceCam
go.pcworld.com/buswebcam

Roccat Isku FX Gaming Keyboard Is Right on Key

IT USES MEMBRANE keys instead of mechanical ones, but Roccat's \$90 Isku FX delivers the goods. The keys' comfortable size and even spacing let me settle right in to work and play. The keys are backlit; you can toggle the brightness and disable their annoying pulsing effect through Roccat's software. You'll need to install driver software: The keyboard works out of the box, but you'll have to grab a small (20MB) package from Roccat's website to tweak the keyboard's settings.

A Standard Layout

The keyboard's layout is fairly standard, though a few extras are scattered about. Five macro keys run along the left side of the keyboard, joined by three thumb-keys nested under the spacebar, plus the macro-recording key, dedicated media keys, and a back-light toggle button planted at the top of the keyboard. An Easy-shift button replaces the <CapsLock> key, and can be paired with a number of keys on the keyboard to activate a secondary input option.

Only a subset of the Isku FX's keys are programmable: the function row, media keys, macro and thumb keys, and a section of keys surrounding WASD that Roccat dubs the "easy-zone." You can assign secondary functions to your macro keys and to the keys in the easy-zone, activating their assigned functions by pressing the Easy-shift button. Your 'Q' key remains the

letter Q, but pressing Easy-shift and Q in tandem toggles whatever additional functionality you've assigned through Roccat's software. The function assigned can be as simple as calling up another key combination (so, for example, Q becomes <Alt>-J), or triggering a prerecorded macro.

You can also create timers, a function that I've yet to see on other peripherals. Assign a number of seconds to a macro key or trigger it with an easy-shift combo, and a comically raspy voice will bel-low out "10" when there are 10 seconds left, count down from 5, and then shout "Go!" when the timer is up.

Creating timers is a bit of a niche function, but if you're playing a game where important actions happen at regular intervals this could come in handy. I'd love to see timers built into macros—and be able to trigger an ability in an MMO and having an auditory cue of when that ability was ready for use again. Actually, can we get some game developers on that issue instead?

This modest array of customization options might

seem to pale when matched against Razer's vast customization power—Razer lets you reprogram any key to do whatever you'd like—but I appreciate the simplicity.

Most key-customizing that I do happens inside games anyway; and with a total of five profiles and two potential functions for every key within reach of my hand, the Isku FX builds in more than enough modification overkill to satisfy my needs. Couple this diversity with the back-light's decent effort to emulate every color in the spectrum and you won't want for personalization options.

R.A.D. Tracking

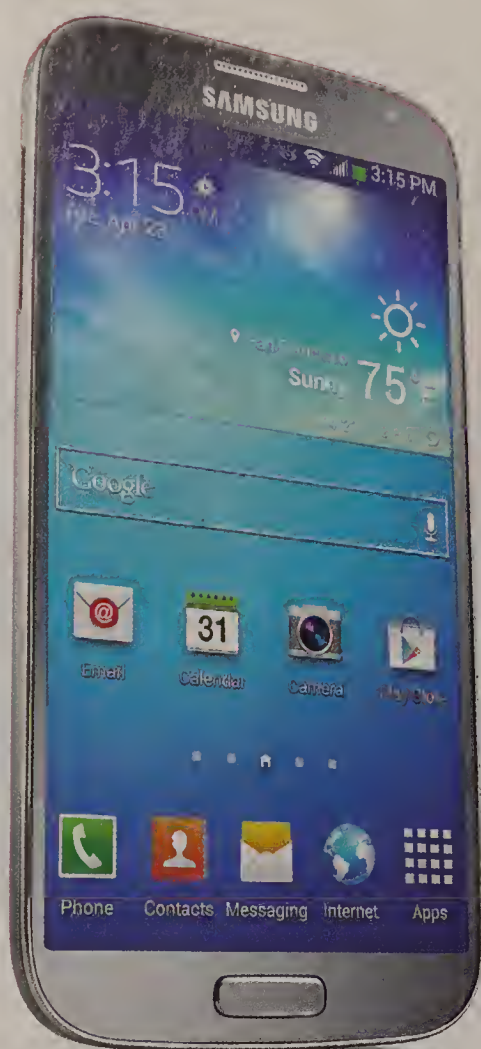
Roccat's R.A.D. system tracks how often you've used the game-centric keys like WASD, the macro-keys, and the easy-shift and multimedia keys, and then it assigns achievements to you based on...well, I'm not entirely sure, as I've only earned one for my first 35,000 WASD strokes, an

The Isku FX lets you customize its color and lighting patterns.

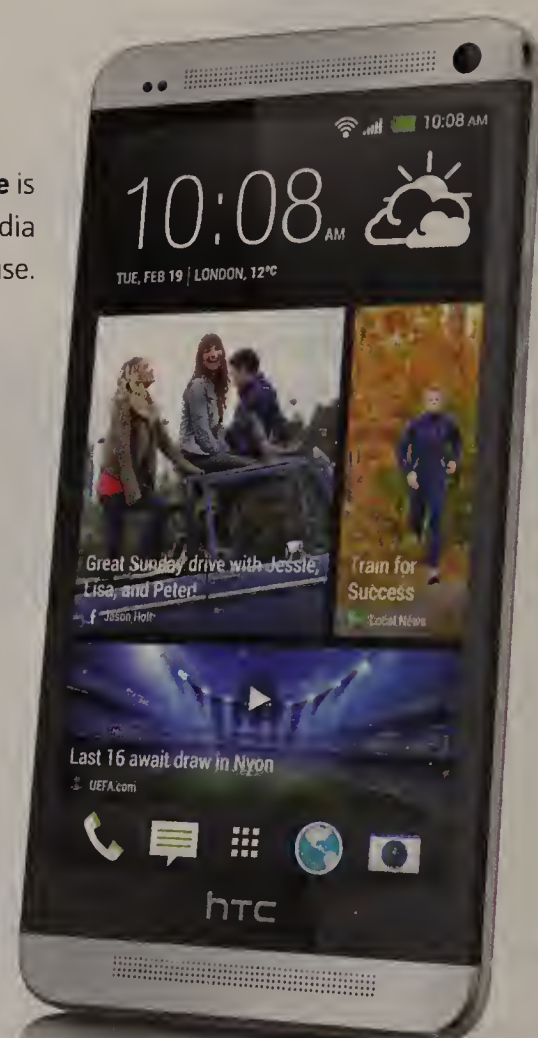


amount I've just about doubled. But I love the idea of quantifying little tidbits like this, and it's easy to ignore if you don't care. Otherwise, the Isku FX's driver software is low-maintenance: Once I'd configured everything to my liking I largely ignored it.

The Isku FX excels at its primary role: turning key presses into on-screen action or words. And it does so at a fair price, bundling lots of customization options with software that stays out of your way. I also appreciate the dedicated media keys, which are a significantly better option than futzing around with function-key combinations. I'd prefer to pay a bit extra for the satisfying crunch and accuracy afforded by a proper mechanical keyboard. But if you don't care about mechanical keys? Great—the Isku FX will not disappoint.—Nate Ralph ★★★★★; \$90; Roccat; go.pcworld.com/iskufx



The Galaxy
S4 has a pixel density of 441 pixels per inch.



HTC's One is a multimedia powerhouse.

Samsung Galaxy S4: Solid and Multifeatured

MEASURING 5.38 BY 2.75 BY 0.31 inches and weighing 4.64 ounces, the Galaxy S4 is a bit lighter and thinner than the Galaxy S3; but lacking the S3's gentle curves, it was less comfortable to hold.

The S4's 5-inch, 1920-by-1080-pixel display (441 pixels per inch) looks sharp. The phone has a removable 2600mAh battery, and a MicroSD card slot that holds up to 64GB of extra storage. I squeezed a full day of use out of the phone on one charge, while browsing the Web, downloading apps, and taking pictures.

Generous Feature Set

The U.S. version of the S4 ships with a 1.9GHz quad-core Snapdragon 600 processor and 2GB of RAM, so the phone can handle 3D games and other resource-heavy applications. Features include Air Preview (view the contents of folders, email, and text messages by hovering your finger a few centimeters off the screen), Air Gestures (scroll through webpages, flip through photos in the Gallery app, and answer the phone without touching the screen), Optical Reader (scan text or QR codes), S Translator (translate typed or spoken queries into any of 12 languages), and S Health (fitness tracking). Photos taken with the S4's 13-megapixel camera looked great.—*Armando Rodriguez*

★★★★★; \$250; Samsung; go.pcworld.com/galaxys4

HTC One: The Android Phone to Beat

THE HTC ONE sits well in your hand. At 5.4 by 2.7 by 0.4 inches, the phone is smaller than HTC's Droid DNA. The phone comes with a 4.7-inch display and has an aluminum unibody design.

A Few Drawbacks and Many Strengths

The One's 2300mAh battery is nonremovable, and the phone lacks a MicroSD card slot, so you can't augment the supplied 32GB or 64GB of on-board memory. In other respects, though, the One is a multimedia powerhouse, starting with its 1920-by-1080-pixel display and two large, front-facing stereo speakers, which pump out surprisingly loud, clear audio. The One's built-in IR blaster lets you use it as a universal remote control. Like the Galaxy S4, the One ships with a Snapdragon 600 processor.

The UltraPixel design of the One's 4-megapixel camera yielded excellent photos in areas with less-than-optimal lighting.

The phone's battery should survive an entire day of normal use (about 9 hours), but playing hours of movies or games on the phone will seriously drain its battery.

Call quality over Sprint's network was solid, with little or no static on either end of the call, but Sprint's data speeds in San Francisco were underwhelming.—*Armando Rodriguez*

★★★★★; \$200; HTC; go.pcworld.com/htcone



The HTC First has Facebook Home pre-installed on it.



Samsung's Galaxy Note 8.0 includes a handy stylus.

HTC First: A Phone for Facebook Junkies Only

THE HTC FIRST is modest in size (4.96 by 2.56 by 0.35 inches) and (thanks to being composed primarily of soft-touch plastic) pleasant to hold. The First's 4.3-inch display packs an impressive 341 pixels per inch, but the phone lacks a user-replaceable battery, and you must make do with the 16GB of on-board memory that HTC provides, since there's no MicroSD card slot. Another drawback: The First's 5-megapixel camera is painfully mediocre.

Home Sweet Home?

The First's biggest selling point is its deep integration with Facebook Home. Notifications from third-party apps show up on the home screen alongside Facebook notifications, and Facebook Home ran surprisingly well on the First's dual-core 1.4GHz Snapdragon processor. I found that the app made it easy to like and comment on my friends' photos and status updates. And to its credit, the First's embedded 2000mAh battery delivered a full 8 hours of use before it required recharging.

Unfortunately, playing music or browsing for apps took more effort than on other smartphones: I had to dig through the app drawer to find the desired items. You can't put app shortcuts or widgets on your home screen, either.—*Armando Rodriguez*

★★★★☆; \$100; HTC; go.pcworld.com/htcfirst

Samsung Galaxy Note 8.0: Appealing, Pricey

THE 12-OUNCE GALAXY Note 8.0 is a sturdy, Wi-Fi-only plastic tablet with an 8-inch, 1280-by-800-resolution TFT display. Under the hood are 2GB of RAM and a quad-core 1.6GHz Exynos CPU, and 16GB of storage. The tablet's vibrant screen offers accurate color reproduction and good viewing angles, though glare and reflections become a problem in direct sunlight. A pair of speakers on the bottom edge of the device deliver okay audio quality as long as your hands don't block the speakers.

The Note 8.0 easily handled all of the Android games I threw at it, and streamed HD video with grace. Its battery eked out 7 hours, 30 minutes of life on our video-playback battery tests.

The tablet has two cameras—a 1.3-megapixel camera on the front and a 5-megapixel shooter on the rear—but no flash.

Convenient Stylus Option

The Note 8.0's virtual keyboard isn't bad, but the tablet's S Pen stylus offers far more than just excellent handwriting recognition. I configured the Note 8.0's "page buddy" feature to change the virtual keyboard to a pen-friendly handwriting-recognition pad whenever I detached the pen, so I could jump easily between typing search queries and writing extensive notes.—*Nate Ralph*

★★★★★; \$400; Samsung; go.pcworld.com/note8

B&W Z2: An Exceptional Speaker and Dock

BOWERS & WILKINS'S \$400 Z2 speaker offers a Lightning-connector dock and AirPlay wireless streaming.

Supporting the latest iPhone, iPod touch, and iPod nano models, the Z2 measures 12.6 by 3.9 by 7.1 inches and weighs 5.7 pounds. My iPhone 5 connected to the dock easily, and felt secure there. In front of the dock sit two tiny capacitive buttons for controlling volume. They are among the first touch-sensitive speaker buttons I haven't hated: Because you can see *and* feel them, there's never any doubt that you're

B&W's Z2 offers big sound in a slick, compact package.

pushing in the right spot, and the buttons are responsive.

Getting the Z2 on my network wasn't too painful in the free B&W Control app for iOS. The process takes the older approach of connecting your device to an ad hoc wireless network that the speaker creates, and then using the B&W app or your Web browser to configure the speaker's networking settings.

You'll need the included remote's input selection button to switch the Z2 between

the Lightning dock, AirPlay, and the auxiliary input, since you have no way to switch the input on the speaker itself.

Inside the Z2 are dual (left and right) 3.5-inch full-range drivers, plus a pair of 20-watt amplifiers. I listened to my docked iPhone 5 and to various sources streaming via AirPlay, and the Z2 sounded great. It offered exceptional clarity for both midrange

and treble frequencies. Bass performance is the Z2's weakest spot: It has a bass port, but no bass driver or subwoofer, and the result is that bass is merely present, not powerful. That said, the Z2 still generates big, loud, impressive sound. I haven't tested a better AirPlay speaker for this price.—*Lex Friedman*

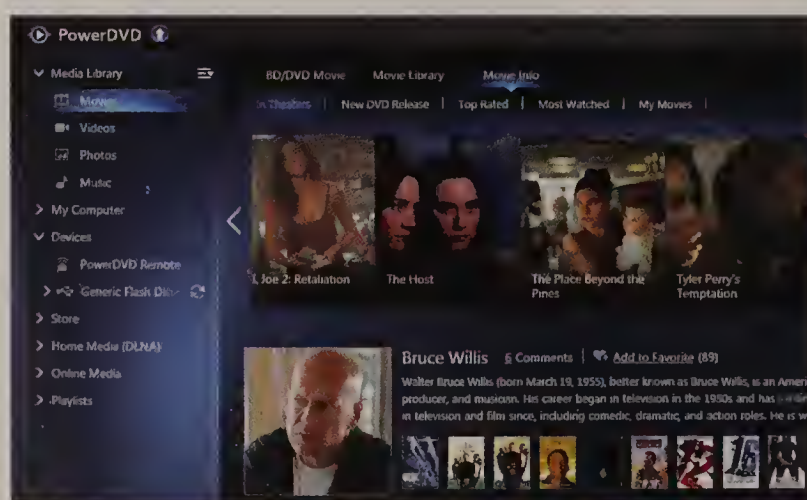
★★★★★; \$400; Bowers & Wilkins; go.pcworld.com/bwz2



PowerDVD 13 Ultra Is Loaded With Improvements

CYBERLINK'S POWERDVD Ultra packages have been the most powerful, feature-laden DVD, Blu-ray, and media players available, but they have also been a bit slow to launch and sluggish to respond. Version 13 starts up more quickly and is better all around, but it's not a must-have upgrade if you own version 12. That said, it has more than a few new features, including a user interface that Windows 8 aficionados will find appealing.

The previous two versions of PowerDVD morphed the program into a jack-of-all-trades media player, and version 13 continues that trend to some extent. The software supports the UltraViolet online



PowerDVD 13 Ultra handles every major video technology.

movie storage/delivery service, as well as video streaming from social networks such as Facebook and YouTube.

PowerDVD now provides TrueTheater enhancements for 1920 by 1080 video. TrueTheater bypasses GPU hard-

ware acceleration, though, so the hardware requirements are extreme. Even on a Core i7-965 test bed, enhanced video wouldn't play smoothly beyond about 25 mbps. That's okay for small downloaded files, but not for most Blu-ray

movies. If you have the horsepower, TrueTheater really makes video look better. The option to disable BD-Live to speed movie start times is another major improvement.

CyberLink added support for two lossless audio codecs, FLAC and APE. It also incorporated a software equalizer with common settings, and you can use Dolby to produce more-spacious sound.

Although PowerDVD Ultra still lacks a few features, such as support for live TV, it remains the best available video and movie playback program for state-of-the-art technologies.—*Jon L. Jacobi*
★★★★★; \$100; CyberLink; go.pcworld.com/powerdvd13

AT&T MiFi Liberate: Impressive Speed, Battery Life

AT&T'S \$170 MiFi Liberate mobile hotspot, made by Novatel, is reasonably easy to use, and it can achieve fast feeds when connected to the AT&T LTE network. This hotspot also differs from predecessors in that it has a touchscreen, and it can tether to your device so that you don't have to rely on a wireless connection between the two.

The small touchscreen is not as responsive or pretty as an iPad screen, but it's good enough to facilitate basic interaction with the device. The screen first shows four icons (Connection Details, Data Usage, Connected Devices, and Settings); you simply touch one of these icons for more information or options.

The top bar of the home screen displays the connection strength, the time, the number of connected devices, and the battery level.

Easy-to-Use Settings

When you touch the Connection Details icon, you obtain a lot of helpful information, including the name of the Wi-Fi network that the Liberate creates, the Wi-Fi password you'll need to connect, the type of security, and the maximum number of devices you can connect (ten). You'll also find the URL for a page that allows you to tweak the finer settings of the device.

Touch the Settings icon,

and you can mess with additional settings such as the screen time-out interval, the brightness, on/off toggles for airplane mode and roaming, and sound alerts.

A slot for a 32GB MicroSD card (sold separately) sits on the front. Any connected device can access the card's content, via a Web browser or DLNA. AT&T and Novatel suggest using the card for

text messages, but I suspect that the capability is there mainly so AT&T can send you messages about your data usage and other billing issues.

Fast and Long-Lived

The Liberate connected with AT&T's LTE network in San Francisco quickly, even in some tough coverage environments (basements, parking garages, between

the Liberate, we charged it up, turned on the Wi-Fi network, and then connected an Origin P170HM laptop to that network. On the laptop we ran a script that kept a constant stream of webpages, movies, and music flowing. We then noted the time when the Liberate's battery failed.

The results were stunning. The Liberate's 2900-mAh battery outlasted that of every phone-based mobile hotspot or freestanding hotspot we've tested, achieving 16 hours, 40 minutes of constant operation on one charge. In my tests at home, the device took about 4 hours to charge back up when connected directly to the laptop through a USB cable.

Bottom Line

Overall, I found the Liberate easy enough to use, and I like the speed and reliability of its connection to the AT&T LTE network. I especially like the long battery life, which is an important factor for people who regularly use a mobile hotspot as their main connection to the Internet.

The Liberate lists for \$170, but you can get it for \$20 with a two-year AT&T Data-Connect plan, which runs \$50 a month for 5GB of data (with a \$10 fee for every gigabyte over that). The plan also includes free access to 25,000 AT&T Wi-Fi hotspots in more-populous areas of the United States.—Mark Sullivan

★★★★★; \$170; Novatel; go.pcworld.com/liberate



The Liberate is a reliable hotspot.

movies, music, and photos.

But using the Liberate as a media server is a little clunky. A mobile hotspot seems to be a less-than-ideal media server because of its limited capacity and restricted user interface for file management. I suppose that if you have large movie files that you must play simultaneously on multiple devices, storing them on the Liberate might work. For the most part, however, this function is a solution in search of a problem.

The hotspot is GPS enabled so that connected devices without GPS capability can share location information.

The Liberate can also receive

tall buildings). Testing in our office in the middle of the workday, I saw average download speeds of about 12 megabits per second, and uploads averaging around 10 mbps. Testing from my home in the evening, I recorded download speeds that routinely approached 20 mbps, and upload speeds in the vicinity of 15 mbps.

That's more than enough speed for downloading music and movie files, and streaming media at high-definition rates. Speed is very important for a mobile hotspot, because all of the devices connected to it must share the same single pool of cellular-data bandwidth the hotspot taps.

To test the battery life of

Unigine Benchmark Offers Room to Roam



FROM THE CANDLELIT crypts in 2007's Sanctuary to the blue skies of 2011's Heav-

en, Unigine benchmarks serve up stats with a helping of eye candy. In the latest benchmark, Valley, the twist is size—and plenty of it: They've squeezed a national park into this one.

Valley consists of 18 scripted runs through the environment, from flowerbeds to mountaintops, in rainstorms and dappled sunshine. Depth of focus changes, shadows lengthen, leaves flutter, and drops of water splash. At the end you get a raw score and frames-per-second numbers (average/minimum/maximum). It's enough to gauge your PC's gaming potential in a general fashion. You can also explore at will; Valley's enormous size makes hikes in its meticulously designed forests a holodeck-style pleasure.

Nice as Valley is, benchmarking is moving beyond basic frame-rate numbers. A graph with frame time in milliseconds to track stuttering issues would be a welcome addition to the Basic and



Unigine Valley tests PC performance with eye-popping graphics.

Advanced versions. The Pro version offers deeper analysis, but also sports a price tag clearly meant for developers. More on point are several visual miscues, the most serious being scenery pop-in even at the highest levels of detail. In some areas, flowers seem to jump out of the ground to greet you as you pass by.

Even so, if you're looking to test or show off your high-end gaming rig, Valley is a fine companion to Heaven.—*Jim Norris*
★★★★★ ; free (Basic), \$20 (Advanced), \$495 (Pro); Unigine;
go.pcworld.com/uniginevalley

Software Engineer III, Multiple Openings.

Newark, DE and various unanticipated client sites throughout the USA. Research, analyze, design, develop and implement software applications in a client/server environment; also design, implement and maintain various programming and operating systems; work independently testing and developing software applications in accordance with project specifications; oversee systems implementation and prepare project status reports and formal presentations as required; communicate project specifications effectively with project team. Requirements: Master's or equivalent in CS, CIS, Engineering, Math, Electronics, Business, Mgmt, Technology or related field; no prior professional experience necessary. In lieu of a MS, we'll accept the equiv. to a U.S. BS with five (5) years of prior progressive professional experience in the position offered or a related position. Extended travel and/or relocation. Mail resumes to: Tek Tree LLC, Job #SE03, 3104 Drummond Plaza, Newark, DE 19711.

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What Is It They Ask, You Tell them, Well I Have Found This Simply

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Fences 2 Makes Desktop Icons Smarter, Cleaner

DOWNLOAD



STARDOCK'S \$10 FENCES 2 eliminates the annoyances of desktop icons. It feels like such a natural part of Windows that it makes me wonder why Microsoft doesn't build a similar feature into the OS.

Fences groups icons into virtual folders on the desktop, such as for your favorite applications, frequently used documents, and Web bookmarks. When you launch Fences for the first time, it offers to group your existing icons, so you get three fences to begin with. The groups are easy to rename and rearrange.

My favorite feature: Fences can hide the icons once you leave the desktop idle. Double-click anywhere on the desktop, and your fences pop back into view. You can also opt to hide or show the icons yourself.

Version 2 introduces a feature called Desktop Pages. Just as with

home screens on a smartphone, you can have multiple "pages" on your desktop. Also new is Folder Portals, a feature that lets you place interactive shortcuts to folders on your desktop. The feature is interesting, but has its drawbacks: You can't use the keyboard to quickly search within a folder, and you can't drill down to subfolders (clicking a subfolder merely opens it in your file manager).

Fences was an excellent product already. Version 2 keeps the good parts and manages to avoid bloat.

—Erez Zukerman

★★★★★;

\$10; Stardock;

go.pcworld.com/fences2



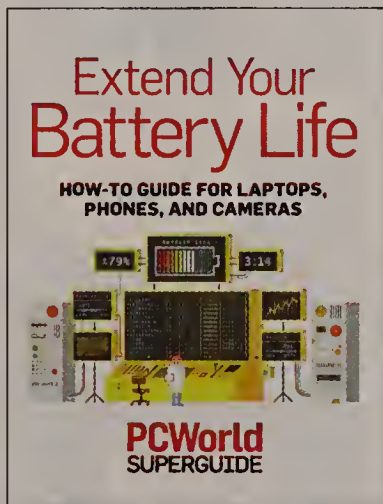
Fences 2 groups desktop icons into manageable, logical sets.

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BEST FREE STUFF

BY JARED NEWMAN, IAN PAUL, DANIEL IONESCU & BRAD CHACOS | ILLUSTRATIONS BY ALEX EBEN MEYER

Free lunches may be hard to find, but the Internet has bushels of free apps and programs, all ripe for the picking. **Here are the best ones we've come across. »**

WHAT MAKES THE INTERNET the extraordinary resource that it is? Some people say it's the way the Web seamlessly connects all of us; others value its role as a limitless data repository; still others are just there for the cute animal pictures. (Grumpy Cat doesn't count.) All of these points are valid, but when you drill down to nuts-and-bolts usefulness, one thing trumps them all.

The Internet is full of free stuff.

We've spent countless hours culling the jewels from the junk to craft our 18th annual roundup of free stuff, a virtual smorgasbord of the very best no-cost programs, apps, and services available online. To make your life easier, we've categorized the entries by the types of people they'll help most.

Dig in. You're sure to find something unexpectedly awesome.

The Busy Geek

Maintaining your own PC is hard enough, but most folks in the geeky set also have to act as unofficial tech support for needy friends and relatives. These free tools can take some of the headache out of keeping computers running smoothly.

Soluto for Windows is a remote-maintenance utility that you'll want to install on those needy friends' PCs lickety-split. The program lets you analyze PC crashes and boot times, update add-ons like Flash and Java, and even install utilities such as Dropbox, Google Talk, and VLC—all from afar. To help new Windows 8 users ease into their altered PC environment, Soluto can install Classic Shell, a utility that inserts the Start button and Start menu into the Windows 8 traditional desktop.

For situations that require more-intensive hands-on work, Google's **Chrome Remote Desktop** add-on for the Chrome browser grants you remote access to another PC for free. The person who owns the remote PC has to reauthorize your access every few minutes, but, hey—the app's free, and you don't have to sign up for a trial account you'll have to cancel later.

Sometimes a video is worth a thousand words, especially when you're trying to show someone how to do something a little more complex, like setting up a connection with Win-

dows' built-in VPN tool. **CamStudio** helps you create screencast tutorials that you can put on your own site or upload to video services such as Vimeo and YouTube.

Two tools take some of the hassle out of general PC maintenance. **SlimDrivers Free**, an app from SlimWare Utilities, runs in the background, detects when new hardware driver updates are available, and installs them automatically. Next, there's Secunia's **Personal Software Inspector**, a security utility that scans your collection of third-party programs and automatically updates them, so you don't have to worry about manually patching Adobe Reader the next time an emergency hotfix rolls out.

For occasions when you receive a questionable file that you fear might be loaded with malware, keep **Jotti.org** in your browser bookmarks. Upload a file to Jotti, and the

site will scan it for badware using more than 20 security suites.

GameSave Manager is a valuable tool for gamers. The program can back up, restore, and transfer PC game saves from old equipment to new hard drives or computers.

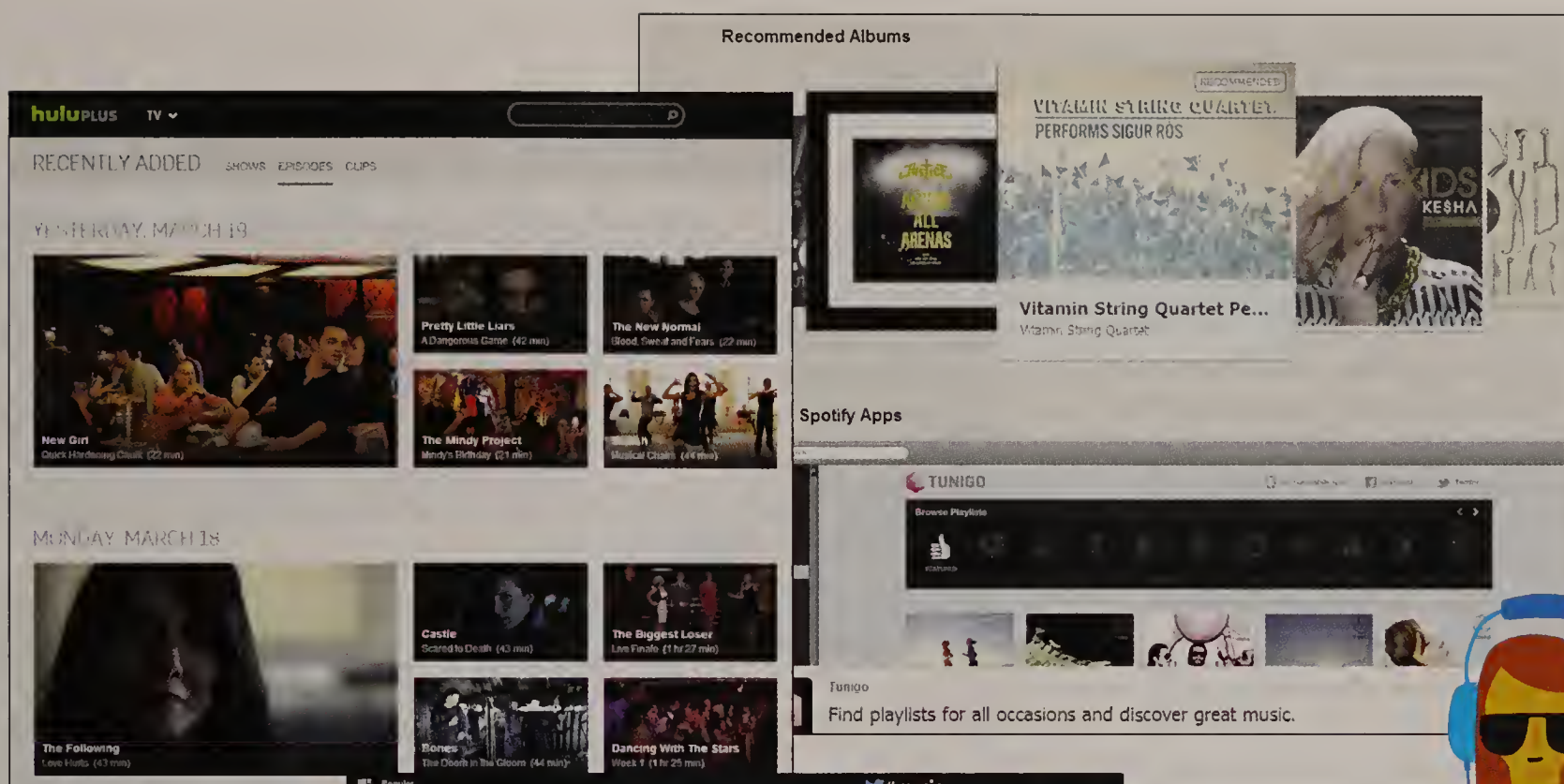
If you're an Android fan, you'll want to download **AirDroid**, which lets you seamlessly (and wirelessly) transfer files back



The screenshot shows the GameSave Manager v3.0.302.0 interface. It features a menu bar (File, Edit, Help) and a main menu with several options: 'Backing up...' (with a folder icon), 'Restoring data...' (with a circular arrow icon), 'Steam Spreader' (with a key icon), 'Customise...' (with a gear icon), and 'Task Logs' (with a document icon). Each option has a brief description and a link to a more detailed page. The interface is clean and modern, with a dark theme.

GameSave Manager transfers game saves to a new PC. and forth between your Droid and your computer, or respond to SMS messages from the comfort of your PC's Web browser. It's seriously handy.

IFTTT (If this, then that) lets you automate tasks to make online services automatically perform tasks on your behalf. Want all your Instagram photos effortlessly transferred to



↑ **Hulu** is the place to go to stream the latest TV episodes.

Dropbox? How about having your Jawbone UP data automatically transferred to Evernote or to a Google Docs spreadsheet? Want tomorrow's weather texted to your phone every morning? IFTTT can do all of those things and more, and it offers thousands of pages of ready-to-go "recipes." Get these nine business-savvy applications and services at go.pcworld.com/busygeek.

The Media Buff

Media lovers have never had it better. If you're a music and/or movie buff, the Internet puts a vast array of wholly free, wholly outstanding digital options at your fingertips, whether you're looking for gratis media gratification or for fun, helpful services that will scratch your entertainment itch.

Sony's **Crackle** service is the go-to source for free movies, featuring titles ranging from *The Fifth Element* to *The Blair Witch Project*, along with a number of stellar concert flicks. **DocumentaryStorm** is brimming with educational films for deep thinkers, while **Hulu**'s vast catalog and next-day publication of many new TV episodes make it the go-to source for

free streaming television shows—as long as you don't mind sitting through the occasional ad.

Meanwhile, **Spotify** can soothe your savage breast (and your listless ear). The service lets you stream its mammoth catalog of on-demand songs via its desktop programs; however, users of the free mobile apps will be limited to not-so-on-demand radio functionality focused on the artists and genres of your choice.

If streaming isn't your thing, you'll need a strong piece of traditional media-playing software to rock your personal media collection. **VLC** media player is the long-reigning star here, and for good reason. VLC works cross-platform and lets you play most video files without having to install codec packs or additional software—plus it's packed with extras like support for podcast streaming and Internet radio.

You may need to convert your physical DVDs or Blu-ray discs to digital formats to coax them into working on your gadgets or with your software. **HandBrake** is the app for that job. It >>

↑ **Spotify's** huge database lets you stream most any song you want.

← **Twitter Music** taps your social media contacts for song recommendations.

converts most common multimedia files, as well as any non-copy-protected DVD or Blu-ray sources, into widely supported MP4 or MKV files. (And if your discs do have copy protection, **DVDFab HD Decrypter** can probably help.)

Google Music is an online music store similar to iTunes, but with a few freebie perks. Most notably, you can store up to 20,000 tracks for free on Google's cloud servers and then use Google Music's Web interface or Android app to listen to them anywhere. Google Music also has some cool free features like Instant Mix, which helps you find long-forgotten tunes in your library.

If you have a particular movie or TV show in mind and want to know which streaming video service streams it, head over to the aptly titled **Can I Stream.It?** website. There, you can search across the most popular streaming, rental, and purchase services to find out whether and where a movie is available, either via streaming or as a paid digital download. Can I Stream.It? pores over Amazon, Crackle, Hulu, iTunes, Netflix, and other services to discover your chosen target.

When you're looking for some new tunes, check out **Twitter Music**, a wonderful music discovery service. The free service taps into your social circles to serve up personalized music recommendations. Twitter Music doesn't offer full-length music streaming, merely short song samples from iTunes. But you can log in with your Spotify or Rdio account to listen to full tracks.

Another great way to find new music for free is with **Noon Pacific**, which creates a “mixtape” of up-and-coming songs, all picked by some of the most prominent music blogs on the Web, and delivers it every Monday at noon Pacific time. The interface is dead simple: It’s a list of all the mixtapes, with this week’s addition at the top. Alternatively, you can subscribe via email to receive notification when new material is available.

The vastness of Netflix's library makes it all too easy to miss a hidden gem when you confront the overwhelming array of options available, especially since the service's star recommendation system can be highly unreliable. **A Better Queue** helps you uncover the best content by juxtaposing Rotten Tomatoes ratings with the Netflix catalog, and then providing genre, average-rating, and publication-date sorting options.

For a bit of musical fun, check out Google's experiment called **Jam with Chrome**. The site sports a selection of 19 instruments

Notes

February 2013

How Handwriting Boosts the Brain -...

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The quick brown fox jumps over the

Bay Area Hiker: San Bruno Mountain

February 2011 Choose from two trailheads and four hikes at San Bruno Mountain State and Count

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Picnic Areas | SF...

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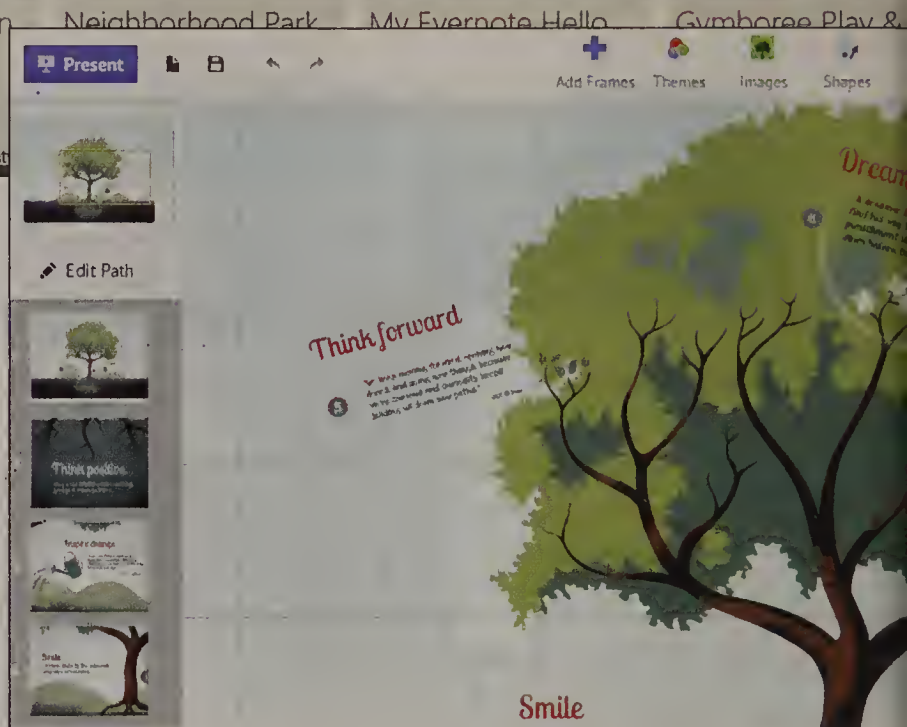
Music Together of
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Music Together

Evernote lets you  get things done without denting your wallet.

Prezi is a white-board and slide-show for making cool presentations. ➔



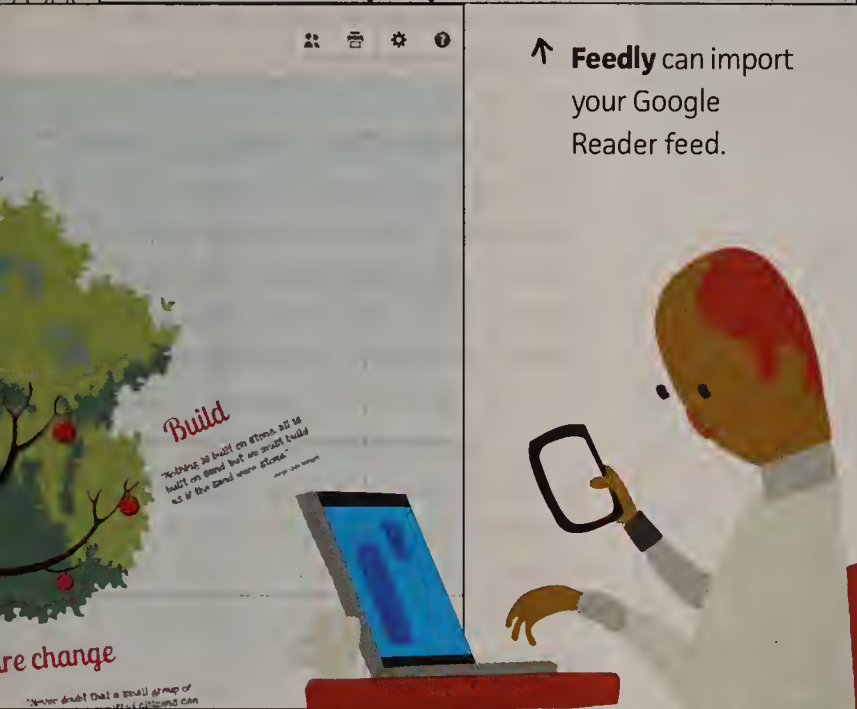
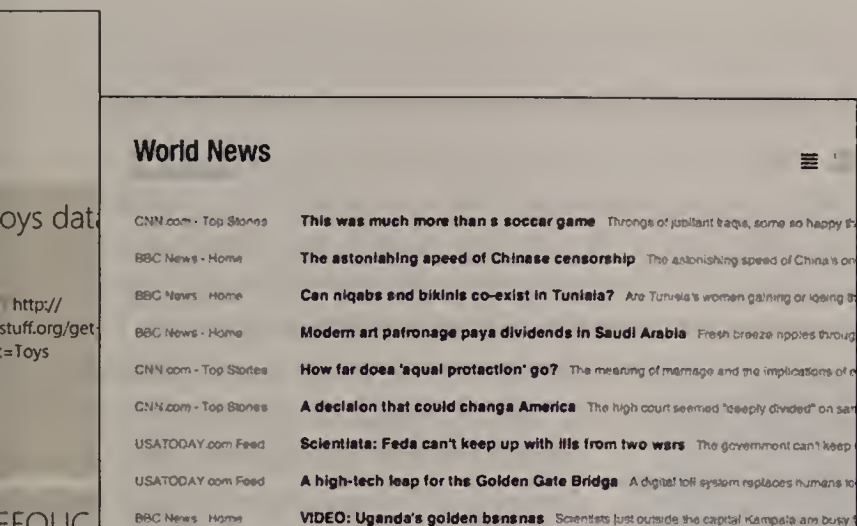
that you can play in-browser, ranging from acoustic and bass guitars to drum kits and keyboards. Once you get started jamming, you can switch between instruments and invite up to three friends to join your session. Think of it as a virtual garage for practicing with your band—or, just treat Jam with Chrome as the incredibly fun distraction that it is.

Get these 13 media apps at go.pcworld.com/mediabuff.

The Productive Businessperson

Believe it or not, “getting things done” doesn’t have to cost an arm and a leg. A plethora of free virtual tools can help you improve your productivity without breaking the bank.

When you have to juggle multiple projects and need one place to keep things organized, **Evernote** lets you easily manage a wealth of notes, images, to-do lists, and even audio recordings. Everything is searchable and sharable, and everything stays synced across the wide array of Evernote apps and programs.



Evernote also offers a suite of complimentary apps like Penultimate, which lets you jot down notes and drawings on your iPad, and Hello, which enables you to keep track of your contacts and meetings.

Google Drive gives you 5GB of free cloud storage, the same syncing functionality as Dropbox, and apps for Android, Chrome OS, iOS, Mac OS X, and Windows. One key advantage of the service is that it plays nicely with other Google services to keep you productive. For example, Drive lets you share individual files or folders with anyone via Gmail, as well as allowing you to bypass the usual 35MB limit on email attachments. You get all the functionality of Google Docs, too—including collaborative online documents, spreadsheets, and presentations—so you can easily

open and edit any document stored on your cloud drive, even if you don't have an office suite installed on your PC.

Not everyone can live in the cloud, though. **LibreOffice** is the best free alternative to Microsoft Office, featuring components with full-featured support for word processing, spreadsheets, slideshows, databases, mathematical equations, and reasonably complex 3D renderings and diagrams. The latest version lets you skin the suite to your tastes, although the interface is far from impressive. LibreOffice excels when you need to work on your documents on a computer that doesn't have Microsoft Office installed on it, or when online alternatives like Google Drive docs either aren't powerful enough or aren't available.

Prezi basically mixes a slideshow with a virtual whiteboard, and then spices things up with eye-catching aesthetics. The result is a zoomable, interactive presentation that's far more engaging than the usual ho-hum PowerPoint. Prezi's Transformation tool lets you edit anything that you add to the canvas, from images to shapes to text.

Keeping track of tasks across your devices is easy with **Wunderlist**. Mobile-focused to-do apps are a dime a dozen, but Wunderlist shines with its simple, beautiful interface and support for a browser app, Android, iOS, Mac OS X, and Windows. Recent updates have made the free service more powerful and useful for teams, so you can add recurring tasks and subtasks, or collaborate with others on your projects.

Speaking of collaboration, when you need to be in touch with your team in real time, turn to **HipChat**. It's a great tool that combines group chat and one-on-one instant messaging sessions, complete with the ability to share images, PDFs, Office docs, and other files for instant feedback. Team members can log in using mobile, desktop, or Web apps alike; and even better, it's free for teams of up to five people.

CoBook is a gorgeous iPhone app that keeps your personal, Facebook, LinkedIn, and Twitter contacts organized in one place, creating unified contact details. Crucially, the app segregates a person's info by network; for example, Twitter updates won't flood your friend's main contact card—instead, you have to tap the Twitter icon on the contact card to view tweets. CoBook also adds a new spin on groups by using tags to organize your contacts, and you can create multiple tags for a person.

Cardmunch is another great iOS app to add to your contact-management arsenal. The app lets you snap photos of business cards, and then seamlessly converts the information into a contact sheet that you can save to your phone, complete with info pulled from the person's LinkedIn account. It's highly accurate and extremely useful, and Cardmunch even offers to connect you with your contacts on LinkedIn.

Email remains the universal method for business communication, but keeping on top of your inbox isn't always an easy task.

Mailbird is a new, free (for now) email client that sports a >>

simple, intuitive interface designed to help you zip through your clogged inbox. Mailbird is in beta and currently supports only Gmail users on Windows PCs; but if that sounds like you, Mailbird offers a fast, no-frills email experience.

If that doesn't sound like you or if you're feeling adventurous, check out AOL's **Alto Mail**, which intelligently organizes your incoming mail into grouped "stacks," similar to actually sorting physical mail on a table. Alto Mail arranges the stacks according to customizable filter preferences. This striking-looking Web service works with AOL Mail, Gmail, iCloud, and Yahoo Mail.

Unfortunately, while Alto is free, it's in invitation-only beta. But you can request an invitation from the Alto website.

PicMonkey and **Pixlr** are two free browser-based photo editors that let you make complex edits to your images. Pixlr is the more full-featured of the pair, while PicMonkey packs a more streamlined interface that's better suited for adding Instagram-like effects.

With Google axing Reader this summer, it's time to look at alternatives to replace the legendary RSS service. The best of the bunch is **Feedly**, which can handily import your Reader feed and even goes a step beyond Reader thanks to its Facebook and Twitter integration. Feedly also boasts mobile apps for iOS and Android—and mobile is an area where Reader faltered. For your viewing pleasure, Feedly displays articles in either a traditional text interface or a magazine-style display chock-full of imagery. Get these 12 productivity tools and services at go.pcworld.com/productive.

The Connected Commuter

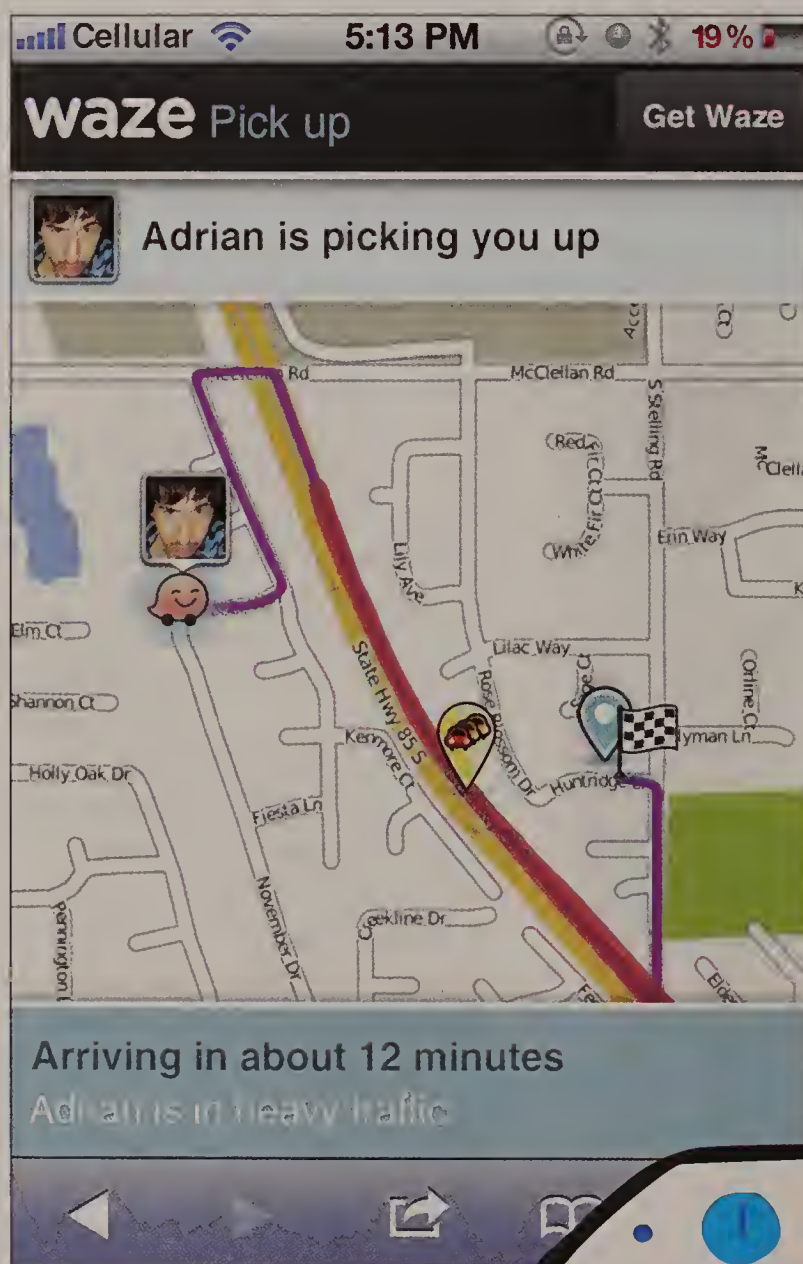
One day we may all be lucky enough to work from home. For now, however, a regular commute is the reality for many of us. Fortunately, you can make the most of your daily journey and perhaps even cut back on your travel time with the aid of nothing more than your smartphone and a few simple apps.

The first tool on every driving commuter's list should be **Waze** for Android, BlackBerry 10, and iOS. Waze is a turn-by-turn navigation app designed specifically for commuters. The app offers you the optimal route to work based on real-time traffic conditions harvested from other Waze users. You can also use the app to get deals from nearby businesses, check local gas prices, spot traffic-cop locations, and share road conditions to help other drivers. The key to Waze, however, is that you need a critical mass of users in your area to make it useful; rural riders need not apply.

If you have a lead foot and no need for optimized traffic routes, check out **Trapster**. This crowd-sourced app for Android, BlackBerry, iOS, and Windows Phone lets you discover speed-trap locations and road hazards, and share any road problems you see.

If you're looking to find the cheapest local gas prices, you can use Waze, as mentioned earlier, but its accuracy on that score is hit-or-miss, especially if you're away from

← **Waze** offers drive times based on traffic conditions.



major cities. **GasBuddy** for Android, BlackBerry, iOS, and Windows Phone is much more reliable. It uses your location to help you find the best crowd-sourced gas prices near you, and its horde of active users help keep prices timely and accurate.

If you rely on public transit for your commute, try **HopStop** to find the most appropriate public transit route—whether bus, train, subway, taxi, on foot, or a mix of two or more—in nearly 120 regions across the United States. HopStop is available for Android, iOS, and Windows Phone.

Once you're on the bus, catch up on your reading with **Flipboard** for Android and iOS. Flipboard is a personalized magazine app that takes links shared with you on Twitter and Facebook, as well as any RSS feeds you like, and presents the articles in a highly visual format. To work best, however, Flipboard requires an Internet connection. For offline reading, try **Pocket** for Android and iOS: It lets you download articles from many of your favorite news sources in a text-centric format before you hit the subway. Get these six tools for commuters at go.pcworld.com/commuters.

The Techno Traveler

Whether you're traveling for business or vacationing with your family, it's essential to keep tabs on flight times, rental car pickups, and hotel reservations. In the past, staying organized meant printing out a handful of pages before you hit the road. Now you can use a few smartphone apps and online services to keep your trip stress-free.

Once your travel details are on the books, keep all of your information organized with **Worldmate**, which is available on the Web and as an app for Android, iOS, and Windows Phone. Send reservations with major hotels, airlines, and car rental brands to trips@worldmate.com, and then use Worldmate to

organize your itinerary and travel confirmation numbers. You can even get turn-by-turn directions. The app also features a "personal travel assistant" that alerts you to impending flights, as well as the day's weather at your destination.

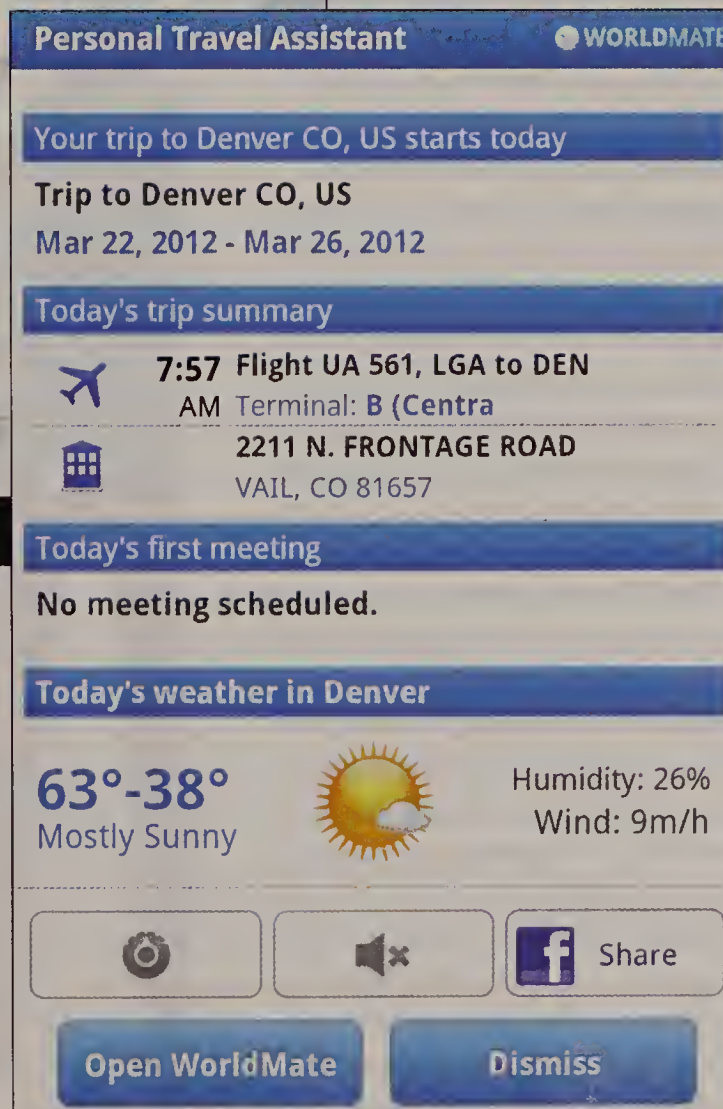
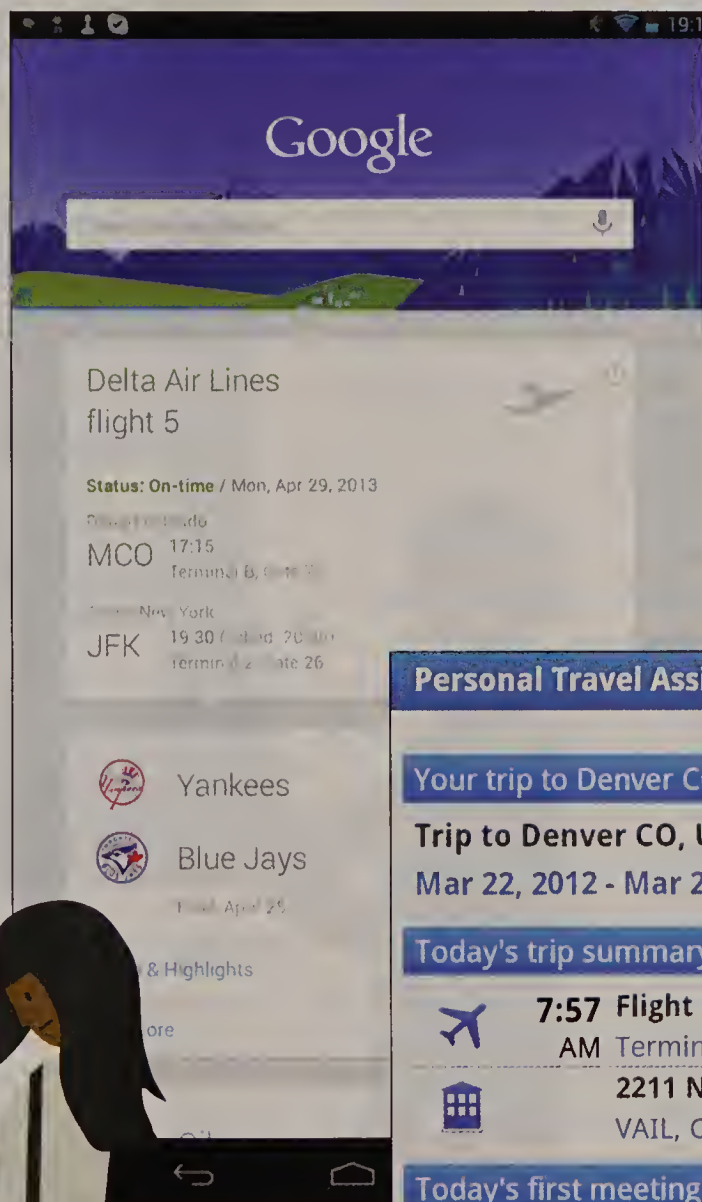
Speaking of personal assistants, you should give **Google Now** a whirl if you already have an Android device running Android 4.1 or newer—the feature is baked into your gadget. The search giant's digital personal assistant gives you "just in time"

information drawn from services such as Calendar, Gmail, and Google search.

Google Now can alert you when a scheduled flight is nearing—it even pulls up your digital boarding >>

← **Google Now** alerts you about your flight's status.

↓ **Worldmate** keeps your trip info organized in one place.



pass and offers information about the flight's status and the weather at your destination. If you have reservations scheduled, Google Now on a GPS-enabled Android device can alert you to traffic conditions en route to the appointment, even recommending departure times for a prompt arrival. Event and reservation reminders, hotel directions, details about local attractions, and seamless currency conversion—Google Now has almost everything a die-hard traveler could want.

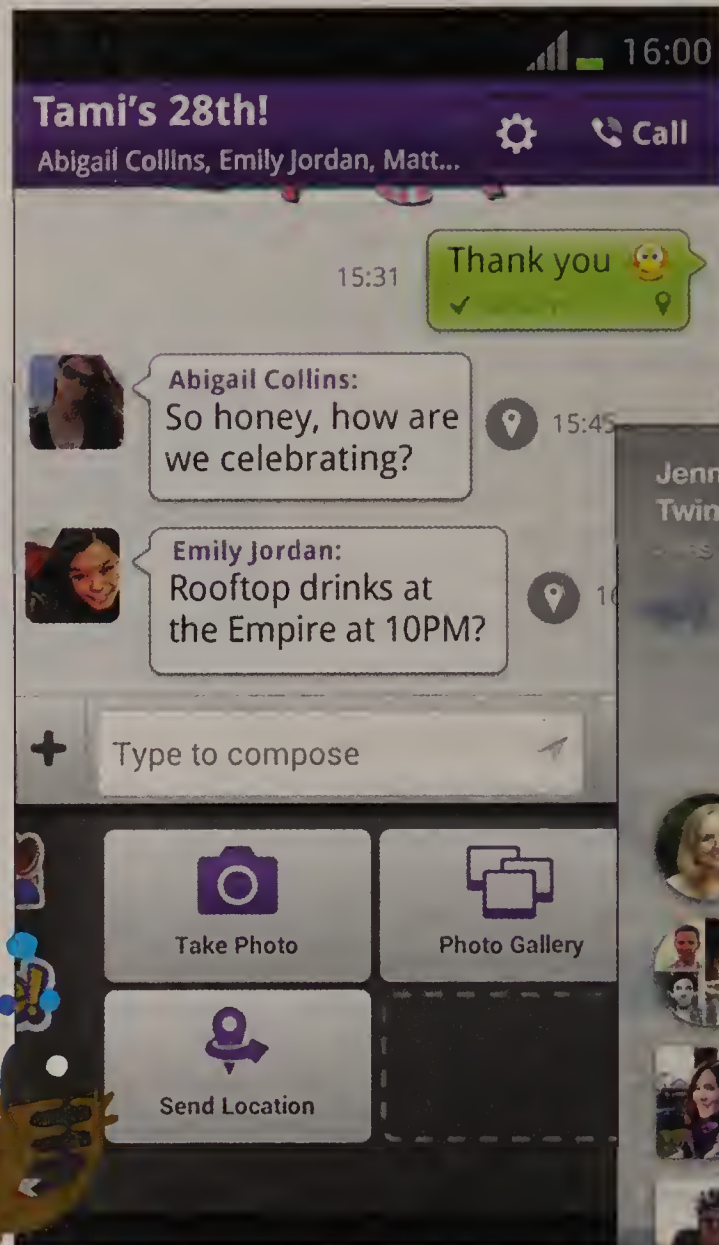
If your trip includes a few hours in an unfamiliar airport, download **iFly Airport Guide** for Android or iOS to get maps of more than 700 airports worldwide. The app also has in-terminal GPS navigation to help you find your gate or that all-important Starbucks outlet, along with information about terminal amenities, parking rates, Wi-Fi availability, and much more. Practically the only thing missing is flight-status info, which is available in the premium version of the app.

So you've landed at your destination, picked up your rental car, and checked into your hotel. Now what? Download **Where**, a GPS-based app dedicated to helping you find local restaurants, bars, entertainment, and shopping.

The app also offers deals from local businesses, and has a social element to save and share locations, and to get recommendations from friends.

Also try **Google Field Trip**. Sort of an amalgam of Where and Google Now, Field Trip notifies you when you wander near a place of interest, whether it be an attraction, an interesting shop or restaurant, a piece of hyper-local history, or any other intriguing landmark. Field Trip's database draws from a wide variety of services including Arcadia and Zagat, and it excels at pointing you to neighborhood highlights that you would otherwise almost certainly miss.

Finally, no trip is complete without a way to find local Wi-Fi hotspots. Enter JiWire's **Wi-Fi Finder**. This app draws on a database of more than 550,000 free and paid Wi-Fi locations in 144 countries. Wi-Fi Finder lets you filter searches for hotspots by price (free or paid), specific Internet providers (such as AT&T or Boingo), or specific business types (such as bar or café). When the app finds a Wi-Fi connection that meets your criteria, you can ask to be notified or have the app connect your



↑ **Viber** is a Facebook messaging alternative.

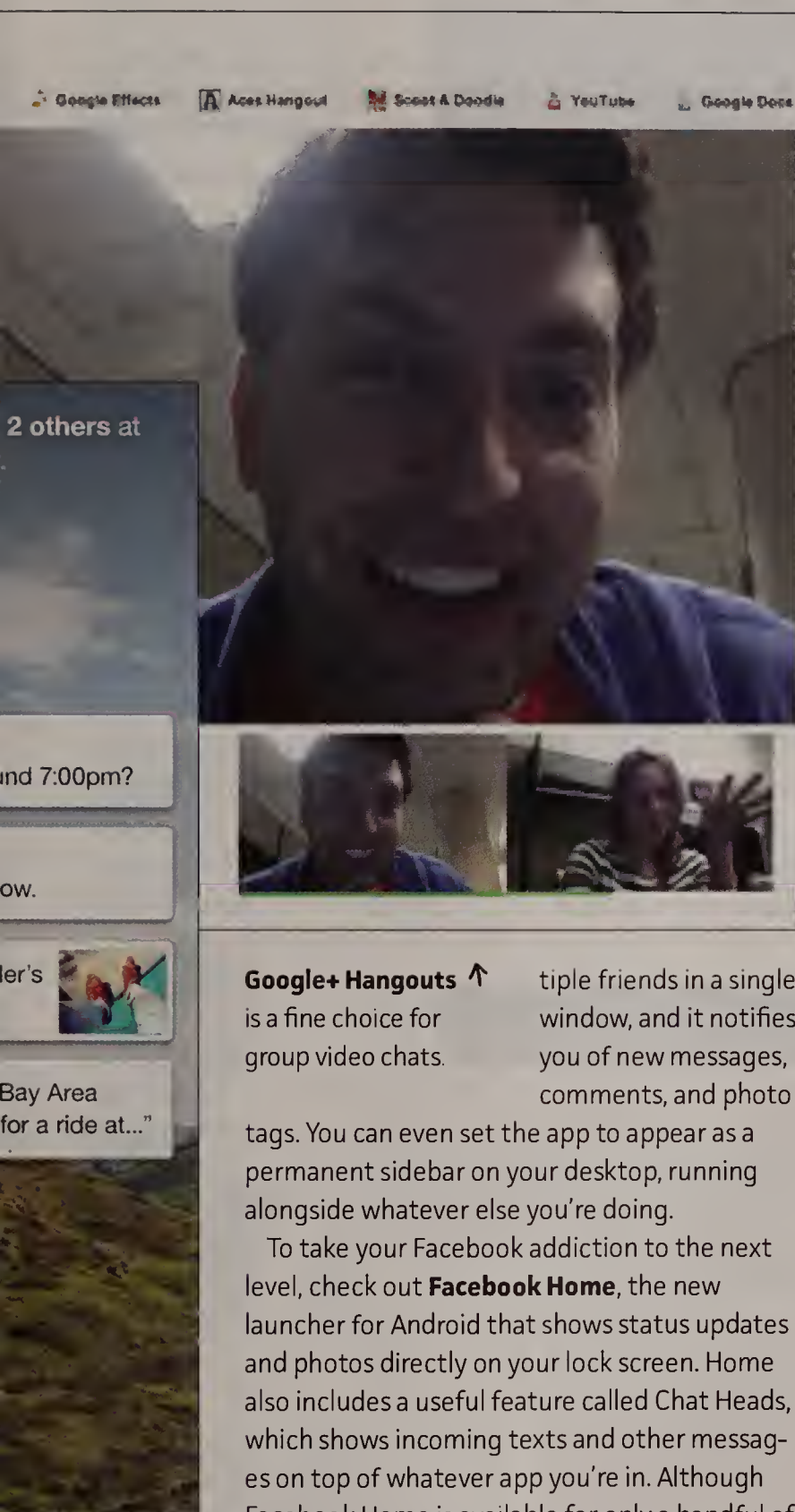
Facebook Home → includes a Chat Heads feature.

device to the network automatically. You can also set up Wi-Fi Finder for offline use, just in case you need to find a wireless hotspot in an otherwise dead data zone. Get these six tools for travelers at go.pcworld.com/travelers.

The Social Butterfly

If you're going to while away the hours on social media, you might as well be as efficient as possible at it. Beyond the basic apps and websites for your social network of choice, you can find plenty of free software to help keep you connected.

Frequent users of Facebook chat should give **Messenger for Windows** a try. This desktop application lets you chat with mul-



Google+ Hangouts ↑

is a fine choice for group video chats.

multiple friends in a single window, and it notifies you of new messages, comments, and photo

tags. You can even set the app to appear as a permanent sidebar on your desktop, running alongside whatever else you're doing.

To take your Facebook addiction to the next level, check out **Facebook Home**, the new launcher for Android that shows status updates and photos directly on your lock screen. Home also includes a useful feature called Chat Heads, which shows incoming texts and other messages on top of whatever app you're in. Although Facebook Home is available for only a handful of Android phones right now, some clever develop-

ers have already created a workaround for other devices.

For people who don't live and breathe social networking, **Snapchat** offers a more disposable take. The free app for Android and iPhone lets users send messages and photos that disappear after a set amount of time—perfect for sharing those odd moments that needn't be preserved for posterity. (Facebook has a similar app called Poke, but it's iPhone-only.)

If you'd rather do your messaging away from Facebook's prying eyes, consider **Viber**, a free alternative to traditional text

messaging and voice calls. It offers apps for Android, iOS, and Windows Phone, with a BlackBerry 10 app on the way. Unlike WhatsApp, its main rival, Viber doesn't have a recurring \$1 per year fee. (The company plans to introduce premium services in the future, but existing features will remain free.)

For video chat, **Google+ Hangouts** remains a cut above the competition. Unlike Skype, Google+ provides group video chat for free, and it also has some fun options such as the ability to watch a YouTube video together. Best of all, you needn't be standing by to receive chat invitations: As long as your friends are still on the call, you can hop in at any time.

Got friends sprawled across several social networks and chat services? **Imo** is your answer, as it supports chat on AIM, Facebook, Google+, Yahoo, and more, all in a single window. Imo has some noteworthy advanced features such as support for audio messages and file transfers, and optional logging of your chat history. Best of all, when you link multiple accounts together, signing into one through Imo signs you into all of them at once. You can link to Imo through its powerful Web app, or access it on your iPhone, iPad, or Android device via a mobile app.

Another great tool for multinetwork users is **Hootsuite**, a powerful app for keeping an eye on Facebook, FourSquare, LinkedIn, Twitter, and more, simultaneously. It's a great option now that Twitter-owned TweetDeck is shutting down Facebook integration and killing its mobile apps. Hootsuite offers a Web app for desktop users, and mobile apps for Android and iOS.

Power users should also keep **Buffer** in mind for scheduling posts on Facebook, LinkedIn, or Twitter. Buffer lets you store up a bunch of updates, and then posts them throughout the day, using algorithms to determine the optimal times. It's useful if you like to share lots of links but don't want to overwhelm your followers with a dozen posts at once.

If photographs are your focus, consider **ThisLife**, a service that lets you combine photos from multiple social networks—including Facebook, Flickr, Instagram, and Twitter—along with photos from your desktop. With your image files safely stored, you can search through them all at once and make edits. ThisLife is free for the first 1000 photos.

When it's time to sit back and relax, **Stevie TV** offers an interesting way to soak in updates from Facebook and Twitter. Available on the Web, Android, iOS, and Windows 8, Stevie TV gathers videos from your friends into a single "channel," along with status updates and other tidbits. It also offers themed channels based on popular shared content, just in case your friends aren't sharing much. Remote-control apps for Android and iPhone are available as well.

Finally, social butterflies can use **About.me** to create a central hub for all of their online profiles. About.me creates a simple online profile with a biography, contact information, and links to pages on Facebook, LinkedIn, Twitter, and elsewhere. >>

→
Lose It tracks
your diet and
fitness goals.



Tuesday April 16, 2013				
MY DAY	LOG	MOTIVATE	GOALS	MORE
Budget	Food	Exercise	Net	Under
1,803	771	274	497	1,306
Breakfast: 352				
Coffee, w/ Cream, No Sug				66
24 Fluid ounces				
Banana, Medium, 7" - 7 7/8" Long				105
1 Each				
Oatmeal, Maple				181
1/2 Cup				
Lunch: 419				
Sandwich, Ham, w/ Whole Wheat				303
1 Each				
Apple, Large				116
1 Each				
Exercise: 274				
Walking				274
1 Hour				

Think of it as a supersize online business card—a static page where people can find out how to reach you in various ways. Get these 11 social media tools at go.pcworld.com/social.

The Augmented Health Nut

An iron will and a gym membership might work for some folks who are trying to stay in shape, but the rest of us might need a little extra help. To achieve and maintain that healthy lifestyle, don't hesitate to lean on some of these free tech tools.

If you're looking to trim some fat, **Lose It** can help. Start by setting up some weight-loss goals, and then use the website or mobile apps (Android and iOS) to record your food intake. Lose It keeps track of all the nutritional details, and gives you a daily calorie budget to stay within. You can also connect with friends who are using the app to help motivate each other, and earn badges that mark your progress.

To help out with the healthy eating, check out **Fooducate**, a website and free app for iOS and Android that steers you

toward food that's good for you. Fooducate employs a grading system that rewards foods that are minimally processed and nutrient-dense, and calls out key details such as the presence of controversial artificial sweeteners or ample whole grains. With the mobile apps, a health tracker lets you know how well you're eating overall.

Of course, a healthy diet is only part of the equation. For exercise, use **RunKeeper** to keep track of activities such as running, cycling, hiking, and biking. Apps for Android and iOS use your phone's GPS to measure your pace and distance traveled, and to estimate how many calories you've burned. The apps also provide audio cues during your workout and let you control music playback. RunKeeper inte-

grates with other apps and devices, such as the Withings scale and Fitbit band, to provide a detailed picture of your health.

Even if you can't get out of the house, you can exercise at home with Skimble's **Workout Trainer** for Android and iOS. These free apps include photos and videos for all kinds of exercise routines that you can do at home—from push-ups and squats to yoga—along with audio that will help you along the way. You can also create your own workout routines, share them with friends, and find recommended workouts from the community. When you've completed your workout, log in to the Skimble.com website to see how you did.

After all that exercise, you'll want to make sure that you're recharging properly. A free Android app called **SleepBot** can lend a diagnostic hand. Just place your smartphone next to your pillow, and the app will track your movements and sounds through the night to figure out how long you slept. (On a slightly creepy note, the app can even record audio so you can play back your snores and sleep-talking.) When it's time for you to wake up, SleepBot tries to wait until you're in a light-sleep phase of your sleep cycle before sounding the alarm.

Get these five fitness tools at go.pcworld.com/healthnut.

The Geeky Foodie

Food and technology have a rocky history, as anyone who has ever spilled coffee on a keyboard can attest, but the tandem has a bright future thanks to a slew of apps and services that are designed to help you eat better.

Your tech-tweaked eating habits can begin even before you head out to the grocery store. Start with **Food on the Table**, a website that figures out which stores in your area will save you the most money and then helps you build meal plans for the week. After you've selected a store, Food on the Table suggests recipes based on both your eating preferences and in-store sales, and creates a printable grocery list.

While you're at the store, try using **Consmr**, a website and iPhone app that offers instant user reviews of specific grocery items. Curious about the consensus on those weird new Lay's Chicken & Waffles chips? Just scan the barcode or search by name, and you'll find that opinions are decidedly mixed. You can also filter for keywords, such as *gluten-free*, view nutrition grades, and see alternative products that people liked better.

Don't feel like cooking? Find a nice restaurant nearby with **Ness**, an iOS app that attempts to be the Pandora of eating. At first, Ness makes recommendations based on what you're in the mood for (casual or upscale, for example) and the time of day. Over time, the app learns what kinds of restaurants you like, and uses your eating history to make smarter suggestions.

When you want to make a reservation, use **OpenTable**. With the app (and the website), you can quickly look up places to eat and see available seating times—and plenty of local establishments tend to support it. The app also has its own collection of user reviews, ratings, and menu descriptions, making it a life-saver for last-minute date nights.

While enjoying your meal, don't just slap a photo on Instagram. Instead, make a note of it with **Evernote Food** for Android and iOS. The app serves as a scrapbook of sorts for food photos, places, recipes, and interesting ingredients. As with everything else on Evernote, your notes sync online automatically, so you can view them from a computer or other device.

After all that, it's time for a nightcap. **CocktailFlow** will help you select a drink on a variety of platforms—the Windows 8 app is especially slick—allowing you to search by base drink, type, and color. The hardest part is remembering to stock up on bitters and olives. Get these six tools for food lovers at go.pcworld.com/foodies.

← **CocktailFlow** helps you pick the right drink.

Food on the Table ↓ saves you money at the grocery store.



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How to Add Windows 8's Best Features to Windows 7

Windows 8 does more than introduce live tiles and gesture control. It delivers many nuts-and-bolts improvements—and the good news is that you can get them all in Windows 7 with a little work. »

BY CHRIS HOFFMAN

IT'S TOO BAD Windows 8's modern UI is so contentious, because the new OS is hands down the best version of Windows Microsoft has ever released. (For a recap of the ways Win 8 outpoints OS X, Linux, and Chrome OS, see "How Windows 8 Trumps the Non-Windows competition," page 78.)

Plenty of tile- and touch-averse desktop PC users would love to add the nuts-and-bolts improvements that Microsoft introduced with Windows 8 to their trusty Windows 7 systems. And the good news is that to a surprisingly large extent you can.

Many of Windows 8's best under-the-hood improvements can be yours for the using in Windows 7 with the help of a few handy-dandy applications. So have your cake and eat it, too—it's sweet.

Better File Copying and Moving

Not to give myself away as a total geek, but I have to say that Windows 8's file-copy dialog box may be its biggest desktop improvement. That feature

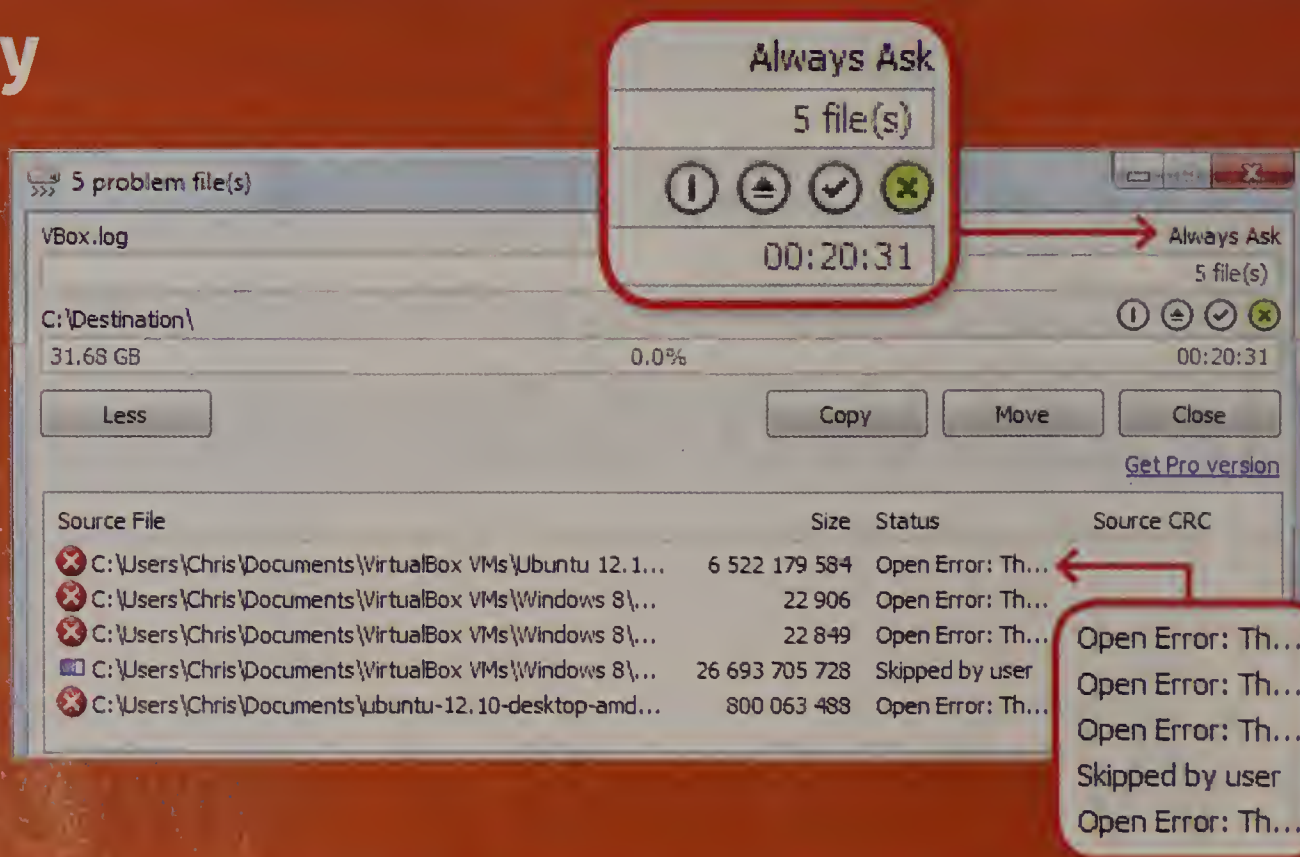
brings all of the operating system's copying and moving processes into a single window, tosses in a pause button, deals with file conflicts more intelligently than its predecessor did, and is just plain faster than before.

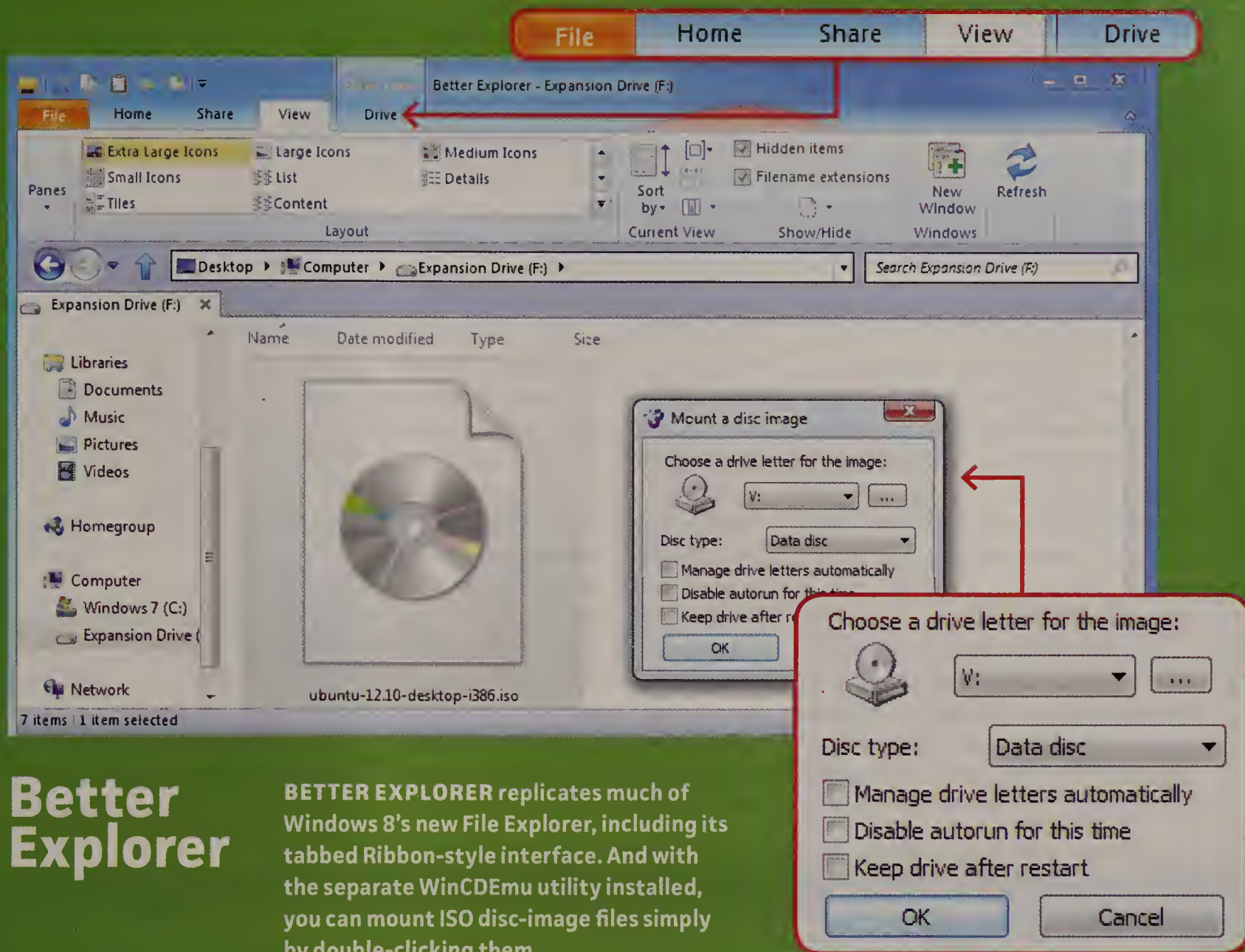
By comparison, the file copier built into Windows 7 isn't very good. In fact, in his introduction to Windows 8's file-copying tweaks, former Windows president Steven Sinofsky wrote that "most people do not have a great tool for high-volume copy jobs"—which reflects the fact that very few Windows 7 users have a third-party file-copying tool installed on their systems. Yes, the Windows 7 file copier is just that mediocre.

You can improve file copying and moving on your Windows 7 system without upgrading to Windows 8 by installing the utterly superb TeraCopy (go.pcworld.com/teracopy). Not only does this utility speed up some file transfers, but it also permits you to pause transfers, a tremendously convenient improvement over Windows 7's default functionality.

TeraCopy

INSTEAD OF pausing when it encounters problematic data, TeraCopy creates a list of the affected files so that you can review them when the mass data migration is complete.





Better Explorer

BETTER EXPLORER replicates much of Windows 8's new File Explorer, including its tabbed Ribbon-style interface. And with the separate WinCDEmu utility installed, you can mount ISO disc-image files simply by double-clicking them.

That's not the only useful trick up TeraCopy's sleeve, however. Rather than halting transfers completely when an error occurs (as Windows 7 so frustratingly does), the program skips over problematic data and displays troubled files for your perusal at the end of a mass data migration. Even better, TeraCopy offers Windows shell integration, so you can completely replace Windows Explorer's normal copy, paste, and move functions with TeraCopy's excellent alternatives.

An Improved Windows Explorer

I understand the profound depth of the unhappiness that many desktop die-hards feel: Five years after its debut in Office 2007, the Ribbon interface continues to be a polarizing feature. Still, you

can find a lot to like about File Explorer, as the Ribbonized version of the traditional Windows Explorer interface has been dubbed in Windows 8.

For one thing, the Ribbon provides easier access to less-often-used functions, such as the one for toggling the display of hidden files. Windows 8's File Explorer also restores the much-beloved Up button, which both Windows Vista and Windows 7 lack, giving you an easy, one-click way to go up a directory.

The new File Explorer even allows you to mount ISO disc-image files by double-clicking them, an awesome feature that eliminates the need for third-party ISO-mounting software.

If you want to spiff up Windows 7's Windows Explorer with a Ribbon and an Up button, your best option is Better Explorer (go.pcworld.com/betterex). This utility actually packs in more functional-

ity than Windows 8's File Explorer does, thanks to its ability to display multiple open folders in tabs at the top of the window. This upgrade makes wrangling files a breeze compared to Windows' usual multiwindow madness.

Interested? Just pin Better Explorer to your taskbar, and forget that Windows 7's default Windows Explorer even exists. To use TeraCopy with Better Explorer, you'll first have to venture into Better Explorer's options and enable the *Allow third-party file operation replacements* checkbox on the Shell screen.

Install WinCDEmu (go.pcworld.com/wincdemu) if you want to mimic Windows 8's ISO-mounting ways. It's a dead-simple program that allows you to mount ISO files and other types of disc images easily just by double-clicking them. You'll find no faster, easier way to access digital copies of physical discs. >>

A More Powerful Task Manager

No two ways about it: Windows 8's task manager is awesome. It's the most powerful task manager ever included with Windows, and it comes stuffed with stellar features and enhancements, such as the ability to restart explorer.exe with one click, a vastly improved performance-monitoring tab, and a new tool for managing your startup programs. (Microsoft should have added that last feature to Windows a decade ago.)

You won't find a program that exactly mirrors Windows 8's myriad task manager tweaks. But for an advanced task manager packed with powerful features, try Microsoft's Process Explorer (go.pcworld.com/procx). It's a bit more complicated

than Windows 7's task manager, though it's also easier to use in many ways. Process Explorer shows processes in a tree view so that you can see how they're related to one another. This view comes in handy if, say, you ever want to determine which Google Chrome process launched the 50 other Chrome processes that are currently running on your PC.

If you find that you prefer Process Explorer after giving it a whirl, you can make it your default task manager by opening its *Options* menu and selecting *Replace Task Manager*. Easy!

To manage startup programs, you have a couple of choices, beginning with the ever-useful CCleaner (go.pcworld.com/ccleaner). If you read *PCWorld* how-to articles regularly, you probably already have it installed. You'll find CCleaner's

startup manager under *Tools* ► *Startup*.

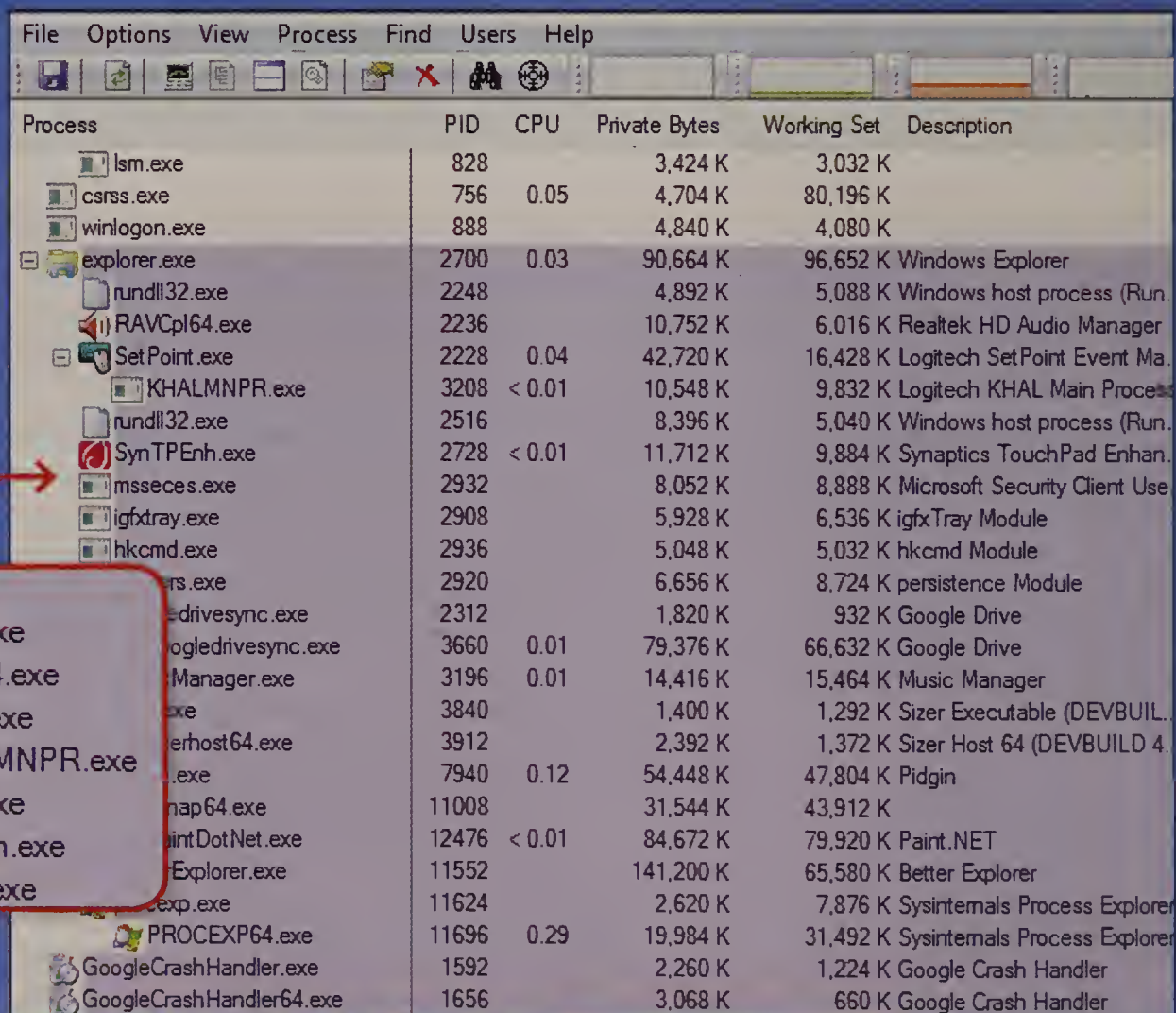
If CCleaner isn't enough for you, try Microsoft's own Autoruns utility. It's the most comprehensive way to view and manage programs that automatically start at boot-up. Autoruns (go.pcworld.com/autoruns) is more complicated to use than the default tool built into Windows 8's task manager, but it also shows many more granular entries that CCleaner and Windows 8's task manager don't.

Integrated Antivirus Protection

Microsoft finally took some responsibility for security in Windows 8, and bundled an antivirus program dubbed Windows Defender with the operating system.

Process Explorer

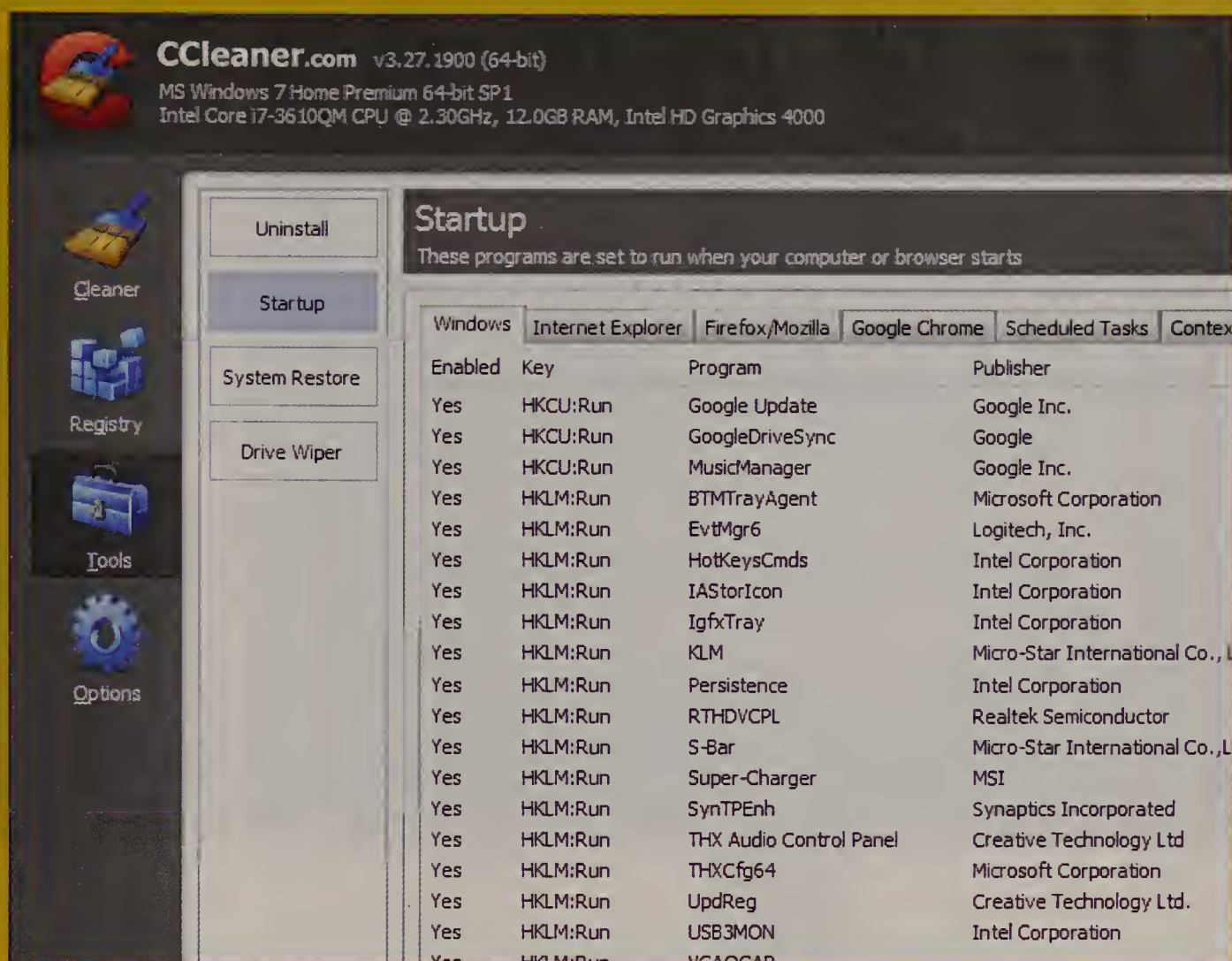
THE TREE VIEW in Process Explorer lets you see the interrelationships of your PC's various processes.



Process	PID	CPU	Private Bytes	Working Set	Description
lsms.exe	828		3,424 K	3,032 K	
csrss.exe	756	0.05	4,704 K	80,196 K	
winlogon.exe	888		4,840 K	4,080 K	
explorer.exe	2700	0.03	90,664 K	96,652 K	Windows Explorer
rundll32.exe	2248		4,892 K	5,088 K	Windows host process (Run...
RAVCpl64.exe	2236		10,752 K	6,016 K	Realtek HD Audio Manager
SetPoint.exe	2228	0.04	42,720 K	16,428 K	Logitech SetPoint Event Ma...
KHALMNPR.exe	3208	< 0.01	10,548 K	9,832 K	Logitech KHAL Main Proces...
rundll32.exe	2516		8,396 K	5,040 K	Windows host process (Run...
SynTPEnh.exe	2728	< 0.01	11,712 K	9,884 K	Synaptics TouchPad Enhanc...
msseces.exe	2932		8,052 K	8,888 K	Microsoft Security Client Use...
igfxtray.exe	2908		5,928 K	6,536 K	igfxTray Module
hkcmd.exe	2936		5,048 K	5,032 K	hkcmd Module
pers.exe	2920		6,656 K	8,724 K	persistence Module
edrivesync.exe	2312		1,820 K	932 K	Google Drive
ogledrivesync.exe	3660	0.01	79,376 K	66,632 K	Google Drive
Manager.exe	3196	0.01	14,416 K	15,464 K	Music Manager
.exe	3840		1,400 K	1,292 K	Sizer Executable (DEVBUILD...
erhost64.exe	3912		2,392 K	1,372 K	Sizer Host 64 (DEVBUILD 4...
.exe	7940	0.12	54,448 K	47,804 K	Pidgin
nap64.exe	11008		31,544 K	43,912 K	
aintDotNet.exe	12476	< 0.01	84,672 K	79,920 K	Paint.NET
Explorer.exe	11552		141,200 K	65,580 K	Better Explorer
exp.exe	11624		2,620 K	7,876 K	Sysinternals Process Explorer
PROCEXP64.exe	11696	0.29	19,984 K	31,492 K	Sysinternals Process Explorer
GoogleCrashHandler.exe	1592		2,260 K	1,224 K	Google Crash Handler
GoogleCrashHandler64.exe	1656		3,068 K	660 K	Google Crash Handler

CCleaner

BESIDES CLEARING away accumulations of junk files and other digital detritus, the CCleaner app provides a tool for managing which programs run at system startup.



Despite the different name, however, Windows Defender is basically just the default Windows Firewall paired with Microsoft Security Essentials (go.pcworld.com/mssecurity), which is freely available as a Windows 7 download.

MSE sports the same interface as Windows Defender, but it also delivers the same solid yet unspectacular virus protection. Why not check out the antivirus field and explore your options if you have to download a program anyway?

Performance Enhancements

Windows 8 boots much, much faster than Windows 7 does. It's like greased lightning matched against the slowest downspout at the molasses mill. Microsoft achieved this extraordinary level of acceleration by putting Windows 8 in a sort of hybrid state where the base kernel session is actually hibernating, as opposed to undergoing a full shutdown.

So, if you want Windows 7 to boot up faster, just use your computer's hibernation option rather than turning it off all the way. Or leave it in sleep mode when you're not using it: Sleep mode draws only a small amount of power, and your computer will resume in a second or two whenever you're ready to work again.

If that's still not fast enough for you, consider buying a solid-state drive. Since upgrade copies of Windows 8 cost anywhere from \$120 (for the base version) to \$200 (for Windows 8 Pro), it's quite likely that you can upgrade your computer to a blazing-fast SSD for less than you'd pay to pick up a copy of Windows 8. SSDs offer tremendous performance improvements over those old-fashioned, clanking platters of spinning rust (aka mechanical hard-disk drives) in transfer times, access times, and operating system startup times.

It's not as if Windows 8 is much faster in real-world use, anyway. You may see some battery-life improvements, and the desktop may feel a tad snappier—

when the Start screen isn't swallowing it whole and getting in the way, that is—but benchmarks have shown that PC games play at about the same speed on Windows 7 and Windows 8.

Though Windows 8 may be a bit less RAM-dependent than Windows 7, if you run into memory problems in Windows 7, you should buy more RAM. Memory is dirt cheap these days—far cheaper than Windows 8 is. You can get 8GB of RAM, which is more than enough for the average PC user, for less than \$50 online. A standard 4GB kit costs about \$30.

And with that, you have outfitted your Windows 7 PC with many of the vaunted nuts-and-bolts improvements that Microsoft introduced in Windows 8, only without all the glittering live tiles. If you're in the mood for continued tinkering, check out "How to Get Windows 8 Features Now" (go.pcworld.com/getwin8), which details programs that can mirror some of Windows 8's aesthetic changes, such as improved multiple-monitor support and the aforementioned live tiles. >>

How Windows 8 Trumps the Non-Windows Competition

BY BRAD CHACOS

IT'S WHAT'S INSIDE that counts. Though whipping Windows 8 might be all the rage right now, Windows didn't become the all-encompassing king of the desktop out of sheer luck. Here are a dozen reasons why Microsoft's latest operating system beats OS X, Linux, and Chrome OS.

functionality into the modern UI, for which Windows' rivals have no match.

Can Windows 8 get better? Definitely. In a lot of ways, however, it's already the best desktop operating system around.

1 VAST SOFTWARE LIBRARY One of the biggest assets of Windows 8 is its vast, deep collection of available software. (I'm talking about desktop apps, not those on the Windows Store.) Mac apps are slick and streamlined, and Linux can cover your basic needs fairly

Beyond the vilified modern UI lies many basic desktop functions that blow the competition out of the water. All the awesome power of Windows 7 is still there in Windows 8, just buried beneath live tiles. Speaking of which, Microsoft snuck some handy

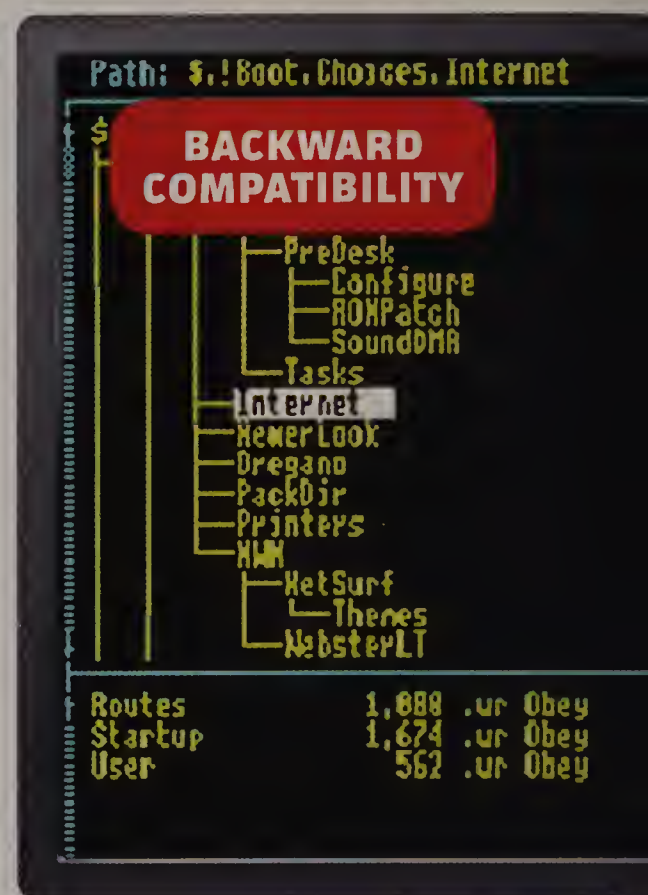
well. But neither holds a candle to the cornucopia of programs available for The OS That Bill Gates Built. Chrome OS? Pffft. I dig the vision and experience, but sometimes life goes beyond the browser.

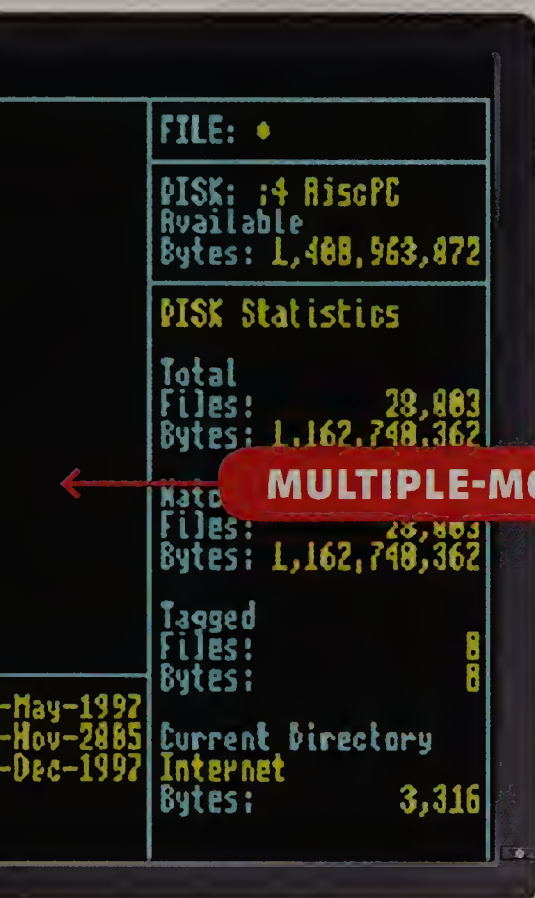
2 BACKWARD COMPATIBILITY

The modern UI was built to showcase the apps in Microsoft's new Windows Store—but Windows 8 also runs the classic desktop software you know and love. Heck, you can still pop open the command line in Microsoft's latest and greatest, so you can run all those ancient DOS programs you probably should've forgotten about years ago.

To this point, Microsoft hasn't left programs behind, no matter how outdated they are. Compare that with Apple's approach of ruthlessly killing off software the second it starts to smell stale.

3 GAMES How do you get the best gaming experience on Linux or Mac? Run Windows 8 games in Wine (on Linux) or in Parallels or Boot Camp (on Mac).





MULTIPLE-MONITOR SUPPORT

Steam on Linux is intriguing, but its game support is still in the bush leagues. As for Google's operating system, my one wish is that someday, somehow, I'll be able to play Bioshock Infinite on the otherwise glorious Chromebook Pixel.

4 STELLAR SYNCING People love iCloud, but Windows 8's syncing options exceed Apple's in almost every respect. If you have an online Microsoft account, you can sync a wide array of items—including Start-screen aesthetics, passwords, app settings, desktop preferences, and browser particulars—to any Windows 8 PC you log in to. It's wonderful, and nothing else compares.

Windows Blue, meanwhile, is said to offer further impressive syncing options, including the ability to transfer tethered Bluetooth hardware associations across multiple machines seamlessly.

5 NATIVE WEB BROWSER Bash Internet Explorer all you want, but it has gotten a lot better ever since Firefox

hit the scene, and it's easily the best Web browser natively available on any major desktop operating system. Some Linux installs run Firefox or Chromium out of the box, and that's excellent—but many other Linux installs run a lesser browser such as Midori or Konqueror.

Chrome OS ships with Google Chrome, which is better than IE in almost every respect, touch versions aside—but almost no one uses Chrome OS.

6 BROWSER SECURITY For the past two years, Internet Explorer has been the target of far fewer exploits than Apple's Safari, Google's Chrome, or Mozilla's Firefox, according to data that Symantec has compiled. And in 2012, the difference grew considerably larger (see page 88 of Symantec's report of its exploit findings at go.pcworld.com/exploitpdf for the relevant chart).

Opera (which doesn't ship by default with any major desktop OS) was the overall winner; but IE came through in better shape than Safari (which had about four

times as many exploits), Chrome (more than three times as many), and Firefox (well over twice as many).

7 WIDESPREAD PERIPHERAL COMPATIBILITY Want your printer or gaming mouse to run on your Mac or Ubuntu box? It'll probably work, but there's some dice rolling involved, especially on a Linux PC. A couple of Apple-branded pieces aside, almost every hardware peripheral supports Windows PCs. Did you know that Apple pretty much invented the FireWire and Thunderbolt connectors? It's true—and those ports are available on Windows computers too.

8 MULTIPLE-MONITOR SUPPORT Display die-hards love Windows 8's multiple-monitor functionality, which is a huge step up from Windows 7's several-screen support. And it's a cinch to set up.

Macs and Linux PCs have fine multiple-monitor software, as well, but they can be a hassle to set up on the hardware side. Mac desktops drive video via »



Mini DisplayPort or Thunderbolt connectors. Both technologies are great, but neither is as common as HDMI, DVI, or VGA. On Linux systems, finding working monitor drivers for a multiple-monitor setup can be a hassle, and Linux sometimes stutters while trying to drive such setups on rigs that have multiple GPUs.

9 SYSTEM SEARCH This one's close. Apple's Spotlight—the search feature built into Macs—is handy indeed. But Windows 8's Search charm is better.

Disappointingly, and unlike in previous versions of Windows, Search in Windows 8 isn't unified: The Search charm dredges up installed programs alone on the first pass, and you have to click separate listings to see the Settings and Files results. But the Search charm also lets you sift through specific apps to locate narrower results seamlessly and quickly. And, if your systemwide (or app-narrow) search draws a blank, you can select the Bing app within the Search charm to scour the Web for the desired item, lickety-split.

10 MULTITASKING What with its superb multiple-monitor support, its intelligent program grouping in the taskbar, Jump Lists, the ever-useful Peek feature, Snap (it works on the desktop, too!), and good old <Alt>-<Tab>, Windows 8 stands out as the *crème de la crème* of operating systems for handling multitasking—as long as you stay out of the modern UI, that is.

Though it may not look as gorgeous as OS X's Mission Control, the taskbar-based multitasking in Windows 8 is vastly more effective from a workflow standpoint, especially if you have a plethora of programs open. Now if only Windows 8 offered virtual-desktop support.

11 THE NEW-CAR SMELL After a few trips around the block, Windows starts to feel a bit worn. Installed programs add up, processes slow down, and your computer simply doesn't respond as well as it did when it was fresh out of the box. In the old days, that was your cue to back up your data, wipe

your hard drive, and completely reinstall the operating system. Windows 8's awesome new Refresh option takes the hassle out of the process, keeping all of your files, settings, and modern UI apps while otherwise reinstalling the entire OS—and it does so in fairly brisk fashion.

If you want to go whole hog, Windows 8's new Reset option enables you to return your machine to its factory state. No other operating system makes clearing out the cobwebs so effortless.

12 GETTING THINGS DONE Don't get me wrong: I own two Linux systems, and I find a lot to like in Macs. But when it's time to roll up your sleeves, grit your teeth, and get things done, nothing tops a Windows machine. Far-reaching hardware and software compatibility—together with Windows 8's excellent syncing and multitasking options—is nothing to sneeze at. Though other operating systems have their place, when you look at the complete package, Windows 8 is the one to beat. ●

12

Legacy hardware often
overstays its welcome.

PC Technologies That Need to Disappear

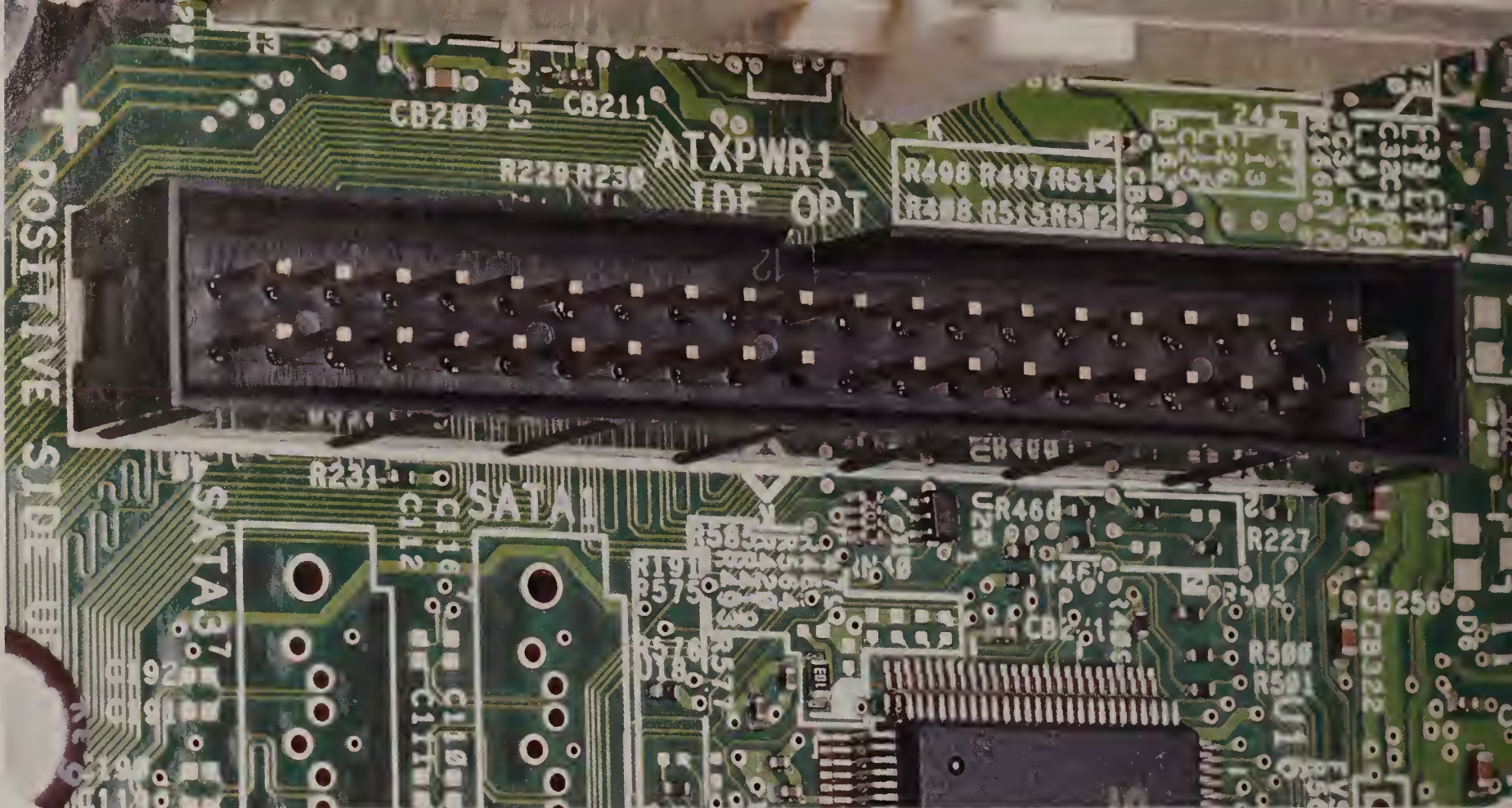
BY MICHAEL BROWN

PHOTOGRAPHS BY ROBERT CARDIN

Cases in point:
These 12 components,
ports, and devices have
lingered far beyond their
freshness date.

Who, me?
Extinct!?





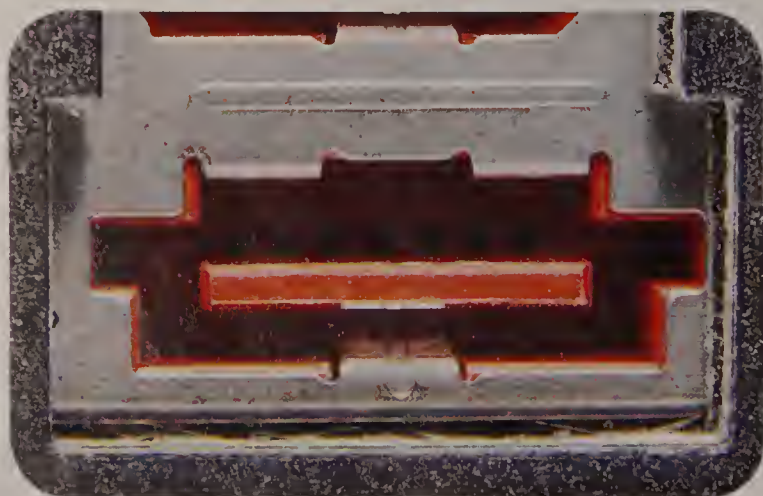
Some technology hangs on long after it's needed.

TIME MARCHES ON, but some PC technologies don't know when they've worn out their welcome. While we applaud motherboard manufacturers for helping us extend the lives of our hardware, we also realize that we're paying for many components that we'll never, ever use. So we've rounded up a dozen legacy technologies that no longer serve much of a purpose. **Begone, obsolete tech!**

1. PATA

PATA (Parallel Advanced Technology Attachment), also known as IDE (Integrated Device Electronics), is so old that you might never have heard of it.

Designed as an interface for mechanical hard drives and optical drives in 1986, it was superseded by Serial ATA (SATA) over ten years ago. So why is it still making appearances today?

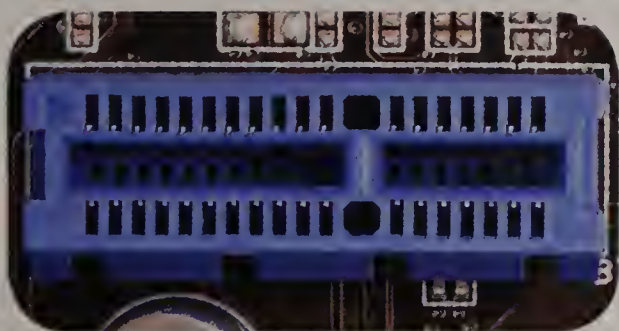


2. eSATA

SATA (Serial Advanced Technology Attachment) delivers the highest speed with storage devices inside the computer, so why not use the same standard outside the computer?

The problem with eSATA is that the cable doesn't carry power to the external device. Internal SATA relies on two cables: one for power and one for data.

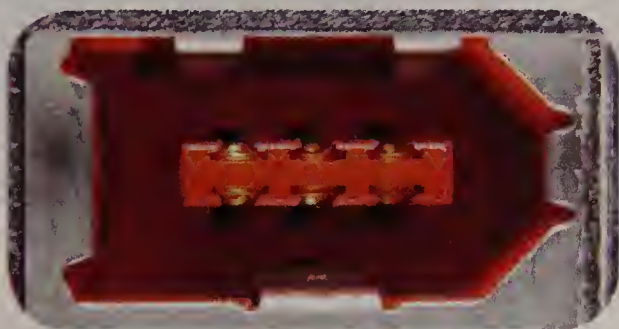
Since eSATA never caught on with consumers, and since now we have USB 3.0 and Thunderbolt (both of which are plenty fast and deliver power to attached devices), it's time to play a dirge for eSATA.



3. PCIe x1 Slots

We need multilane PCIe (Peripheral Component Interconnect Express) slots for video cards and other advanced peripherals.

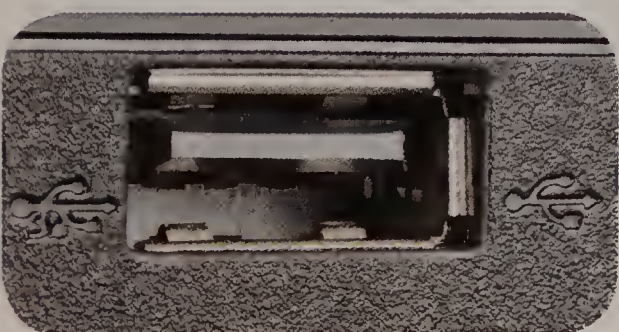
Single-lane PCIe slots are about as useful as nipples on Batman's suit. Go away!



4. FireWire (IEEE 1394)

Apple designed this high-speed serial bus, but you can find it—along with USB ports—on most PCs as well as on Macs.

Despite being a high-performance technology, it never really caught on in the PC industry, and the vast majority of external hard drives use USB. Excise it!



5. USB 2.0

USB 2.0 was the bee's knees—at least until USB 3.0 came along. USB 3.0 delivers higher speeds and more electrical power to attached devices.

So who needs USB 2.0? Let's get rid of it!

Being digital is no longer enough...



6. Memory Card Reader

When was the last time you physically removed a memory card from your camera and plugged it into a memory card reader on your computer? Most people will respond, "Never!"

When I need to transfer photos from my camera to my computer, I connect the two devices with a USB cable.

If I were a more frequent photographer, I'd invest in a memory card with an integrated Wi-Fi adapter and ditch the cable altogether.

Banish the memory card reader!





7. Optical Drives

Okay, this one might make the Luddite community uncomfortable. How will you ever rip DVD and Blu-ray movies, and your favorite CDs?

Who the heck rips anymore? Embrace the digital revolution! You can find plenty of online sources for both high-definition movies and music these days. And the last time I bought a game on disc was 2009's F.E.A.R.

Dump the disc drive!



8. eSATA/USB 2.0 Combo Port

To save room on the I/O panel, many motherboards feature ports that combine eSATA and USB 2.0. Their function changes depending on which cable the user plugs in.

We applaud the innovation, but thanks to USB 3.0 and Thunderbolt, people no longer need these combo ports.

9. Analog Surround Sound

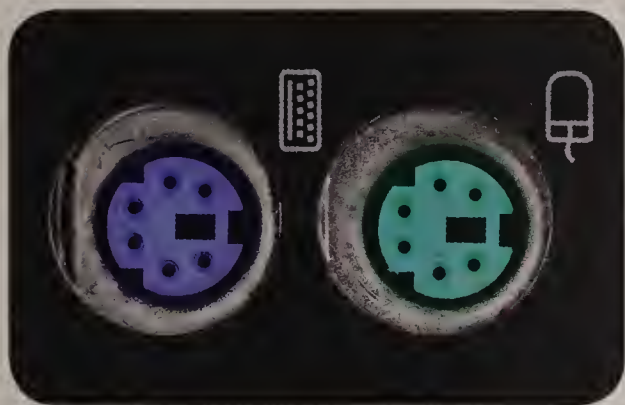
Be honest: When was the last time you contemplated connecting an analog surround-sound speaker system to your PC?

The industry tried to make the process easier for users with wireless surround speakers, but even they gave up on the concept.

If you connect speakers to your computer at all, you're most likely going to choose a 2.1-channel system, so all you really need is a stereo output (because the crossover for the sub will be in the speakers, not in the PC). And if you really want surround sound, buy speakers with an optical input.

Whack those unused audio ports!





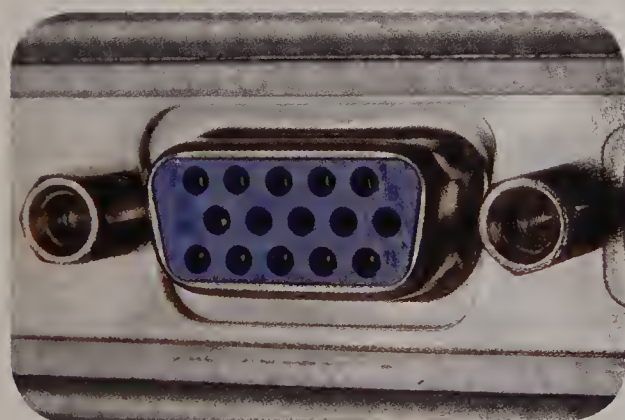
10. PS/2

IBM introduced this mouse and keyboard connector in 1987 with its line of PS/2 personal computers (in a failed attempt to recapture its dominance of the PC market).

Since the ports were not designed to be hot-swappable, plugging a mouse or keyboard into a powered-up PS/2 port carries the risk of damaging your motherboard.

Today, most mice and keyboards connect via USB, so why are PS/2 ports still so common? Because some security-conscious companies disable the USB ports on their employees' computers so that the staff can't smuggle out sensitive data on a USB thumbdrive.

I say that we should make those corporate fat cats buy a special motherboard and save the vast majority of us some cash.



11. VGA

Yeah, we know that corporate road warriors remain wedded to the precious VGA port. But why make the rest of us suffer for it?

Surely corporate America has made enough profit over the past five years to be able to afford to upgrade its boardrooms with new projectors and monitors. Just say no to VGA!



12. DVI

Being digital is no longer enough—especially when you need a second type of digital interface and cable (that is, dual-link) to support the native resolution of a 30-inch display.

Give me DisplayPort (with multistreaming, so that I can daisy-chain several monitors) or give me death!

Ha-ha.
Just kidding!

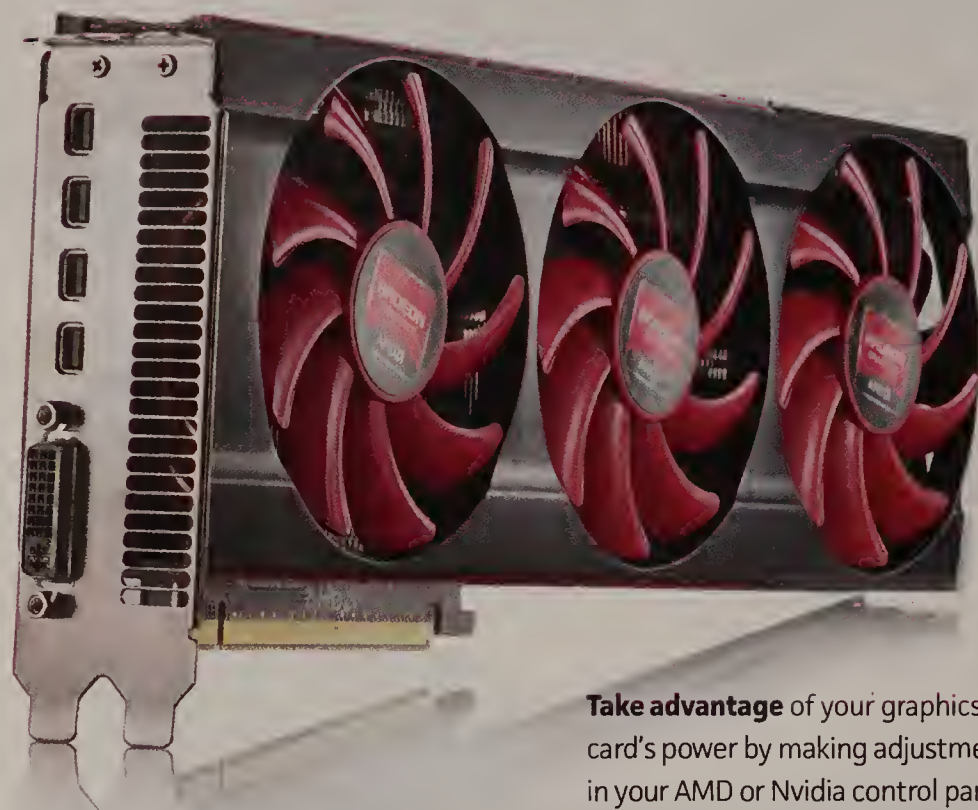


The Mouse?

Touchscreens and touchpads are great and all, but I need a good rodent for playing games.

As Charlton Heston might have said: You can pry my mouse from my cold, dead hand! ●

Here's How



Take advantage of your graphics card's power by making adjustments in your AMD or Nvidia control panel.



Tweak Your Graphics Card's Most Arcane Settings

BY LOYD CASE

THINK YOUR CPU is king? Think again. The most complex processor inside your PC is bolted to your graphics card.

GPU drivers include software that gives you granular control over image quality and performance, but such control panels can be confusing. This guide will explore some of the settings in the control panels from AMD and Nvidia.

Get to know the weirdest, most complex options of your graphics control panel, and start tweaking your display like a pro.

Before I dive into control-panel specifics, here are two important guidelines that you ought to keep in mind.

First, use Windows controls for basic settings. If all you need to do is set the resolution for one monitor, do so in the Display control panel built into the OS. Sure, you

could use the GPU control panel—but if you change graphics cards later, you'll need to learn where the setting is in a new control panel. In contrast, if you handle this operation in Windows, the behavior will stay the same.

You should use the graphics control panels for GPU-

specific settings, though. For example, you can set up Windows for multimonitor support, but if you want extras such as bezel compensation (which lines up the pixels on bezel boundaries to create a seamless image), use the graphics control panel.

Second, when possible, use in-game controls to change 3D settings such as antialiasing. Although GPU control panels let you tweak 3D settings, the results may be impractical or imprecise. For further guidance in using the 3D settings available in graphics control panels, see go.pcworld.com/3dsettings.

Know Your Controls

You can access your GPU's control panel by right-clicking the Windows desktop or by clicking the tray icon in the lower-right corner and clicking the control panel's icon.

Using the latter method yields additional options. With Nvidia, the only practical one is to update the drivers or check for updates. AMD provides cascading menus that amount to a miniature control panel. Those cascading choices can be a little daunting; unless you know exactly what to tweak, you'll probably do better to bring up the entire control panel.

Display Settings

Your GPU has one crucial job: to drive your monitor via an analog (VGA) or digital (DisplayPort, DVI, HDMI) interface. Performing this duty gets tricky in a system with multiple monitors; but even if you have just one, you may want to adjust some settings.

For example, if you're connecting via HDMI to an HDTV, you'll probably want to set a custom resolution to avoid overscan, a problem that arises when the GPU doesn't match its display resolution to that of your monitor, causing the edges of the screen to be cut off. Old standard-def TVs, many aging HDTVs, and even some current models are susceptible to overscanning an input signal.

Both AMD and Nvidia let you set a custom resolution in their control panels. In addition to the custom resolution setting, Nvidia's control

panel has options such as 'sync width'. For the most part, you can ignore such exotic settings. If you're using a really old TV, however, you may need to fiddle with parameters such as 'front porch', an analog-video setting that affects the time between when the last scan line displays and when the next sync pulse from the GPU arrives.

Another key display setting is the aspect ratio. Old games and standard-def TV shows might have a 4:3 aspect ratio, such as 640 by 480 pixels or 1024 by 768 pixels. When you play them on a widescreen monitor, they may look unnatural, stretched to the width of the display. While some monitors have aspect-

ratio controls built in, using the GPU control panel is simpler and ensures that your settings will remain the same if you ever switch displays.

In the GPU control panel, the top radio button for this setting leaves the source material's aspect ratio unchanged but enlarges the image to take up as much of the monitor as possible (you will probably see gray or black bars on the sides of the image, if your source material is 4:3). This is the preferable setting.

The middle option, called 'Full screen' (Nvidia) or 'Scale image to full panel size' (AMD), is typically turned on by default, but you should avoid it if you have scaling issues.

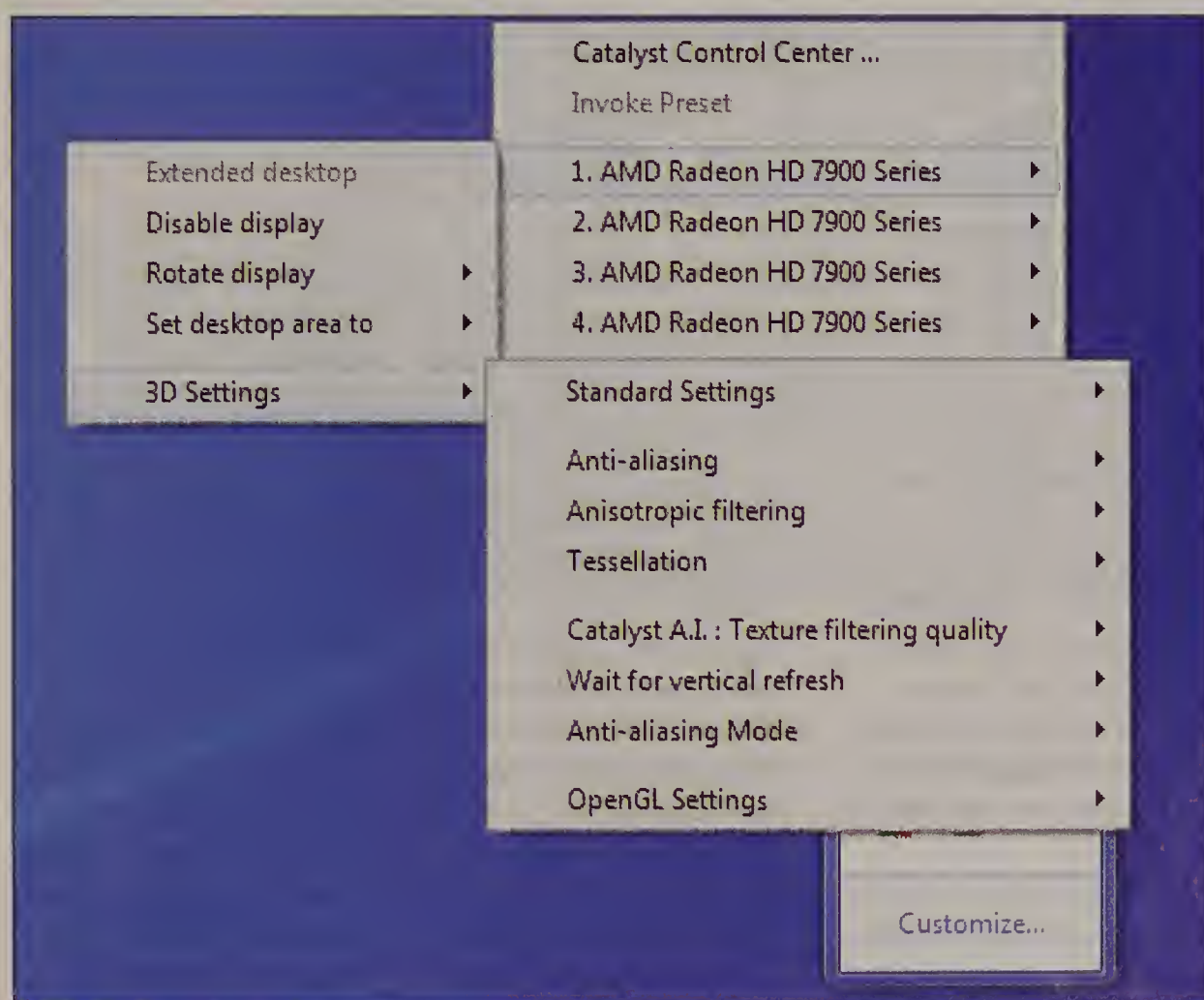
Nvidia calls the third option

'No scaling', while AMD refers to it as 'Use centered timings'. Under this setting, if you try to show a 640 by 480 image on a 2560 by 1600 display, you'll end up with a tiny picture in the center. Though this may represent the most accurate image possible, you probably won't find it pleasing.

You can ignore the control panel's more-specific aspect-ratio settings if you're using a widescreen monitor made in the past five years.

Desktop Color

GPU control panels cover both desktop color and video color. The controls are separate because of differences in how PC graphics and video playback each handle color. >>



AMD makes additional control options available from the tray icon, but the layout is confusing.

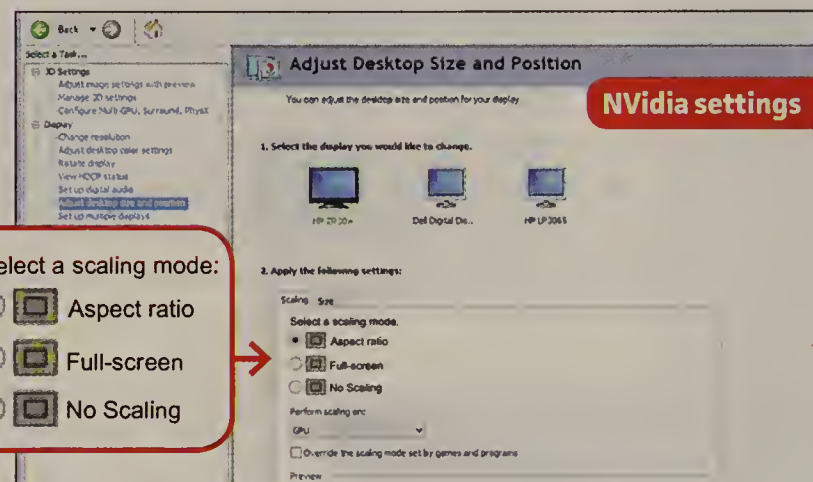
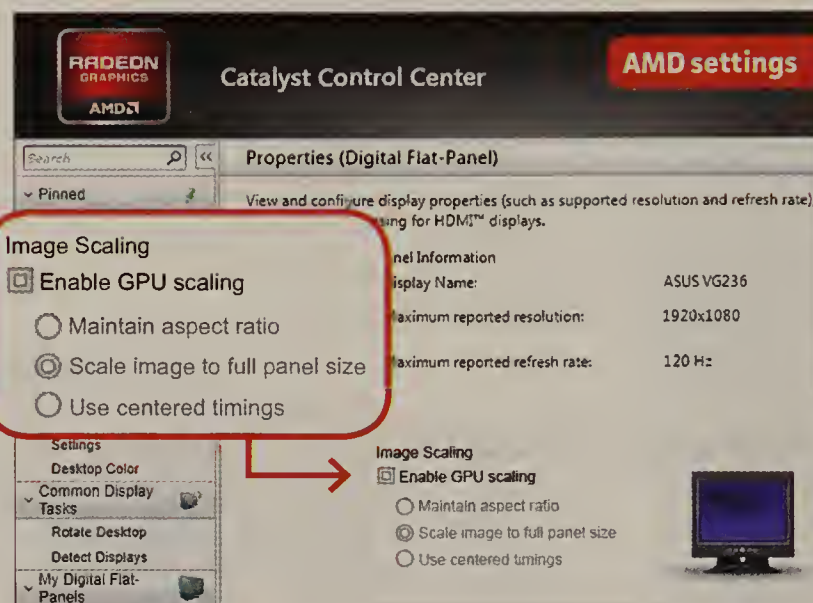
For Nvidia graphics cards, you can either set applications to control desktop color or make the changes in the graphics card. Aside from color-calibration tools, most applications don't tinker with desktop color; even so, if you have a high-end monitor with sophisticated color controls, it may be best to use them. If your display lacks color controls, you'll want to enable color-setting changes with the Nvidia controls.

AMD splits desktop-color controls into two panels. The first deals with general color controls, and works even if you have an analog (VGA) connection; the second, listed under 'Digital Flat Panels', alters the values in the digital output signal sent by DisplayPort, DVI, or HDMI. You also get controls for color temperature. Setting that to 6500K (degrees Kelvin) is generally appropriate for video, but you still may need to calibrate your display to achieve accurate color-temperature results.

Video Color and Quality

If you're using a third-party video player, such as Cyber-Link's PowerDVD, you may want to use the application's controls to manage your video hardware. Most people, however, don't use advanced tools for viewing online or downloaded videos, so being aware of how the GPU control panels handle video is useful.

Nvidia presents three tabs



The best aspect ratio is scaled, but you should avoid altering the aspect ratio that the source materials use.

for video color: basic color, gamma, and advanced color. If you aren't sure about what you're doing, proceed with care: Nvidia doesn't provide much on-screen guidance. Make changes in small increments, and be especially cautious with the gamma settings. (Gamma alters color tonality based on differences between video signals and human perception of color in a well-lit room.)

AMD offers more-granular controls, though they replicate those you might see on an HDTV menu; for example, you'll see presets labeled 'vivid', 'theater', and the like.

Tweak on the basis of what looks pleasing to you, and avoid large-scale changes.

Video-quality settings help address problems such as noisy video shot in low light.

Nvidia's video-quality settings are basic. You can tweak edge enhancement, noise reduction, and inverse telecine, the last of which handles deinterlacing video; you may see this setting called '3:2 pulldown,' which refers to converting film shot at 24 frames per second into 30-fps video. Because video plays at various standard rates in different areas of the world, your GPU has to be

able to handle a range of frame-rate conversions.

If your video player lacks direct hardware controls, you should enable noise reduction and inverse telecine in the graphics control panel. For most video, keeping noise reduction at around 25 to 30 percent is good enough.

In general, avoid edge enhancement, as that option tends to introduce artifacts, such as bright white edges around objects. If you must use it for blurry video, try to keep it to a minimum.

AMD offers a much wider range of video-quality controls. AMD sets defaults for each parameter, but you may want to lower both 'de-noise' and 'mosquito noise reduction' a bit, as too much noise reduction may reduce the detail in the video. I also advise caution in deciding whether to enable dynamic contrast, which can introduce odd contrast shifts into the video stream. You can choose whether to apply the settings to Web-based video.

Finally, modern AMD graphics cards can perform acceleration techniques to improve the quality of downloaded video, or of video you shot yourself. For example, AMD Steady Video uses algorithms to smooth out shaky footage from handheld devices. Also, accelerated video conversion makes it easier to change the file format. The conversion feature offers no quality settings and works only when you drag your video onto a portable media device that supports MP4 video.

Windows 8 and Xbox: Realize Their Hidden Synergy

The ties between Microsoft's OS and its game console have never been tighter, and now the two can play nicely together.

THE GAMING PC and the living-room game console have never been close pals. PC fans play their games, console owners play their games, and never the twain shall meet.

Or is everything changing?

Windows 8 is tearing down that wall. Nestled within the OS are several ways for desk jockeys to interact with their Xbox Live accounts and Xbox 360 consoles without having to abandon their office chairs.

The Games App

Windows 8's Games app provides a basic connection between your PC and your Xbox Live account. Here you can track your Xbox gaming history, buy new games that download to your console, view your achievements and Friends List, or customize your avatar and Xbox Live profile. The ability to futz with your avatar is a particular attraction, as it's a lot easier to manipulate your virtual clothing on a PC or tablet than on the Xbox 360 itself.

For those times when you don't feel like fiddling around on your TV, the Games app has a handful of Xbox Live-enabled Windows 8 games that you can buy, download, and play on your PC or tablet.

Xbox SmartGlass

If you want to get the most out of the Xbox 360 hooks that Microsoft baked into

Windows 8, however, you should download the Xbox SmartGlass app from the Windows Store. This app lets you control your console via Windows 8. For example, you can launch apps and games on your Xbox 360 from your Windows desktop or laptop—a perfect party trick and a great way to convince your roommates that your Xbox 360 has been possessed.

A few Xbox 360 games and apps integrate more deeply with Xbox SmartGlass, offer-

right now, with SmartGlass interaction largely limited to Microsoft Studios titles such as Halo 4 and Forza Horizon. But we hope other developers will start to back this awesome feature as time goes on.

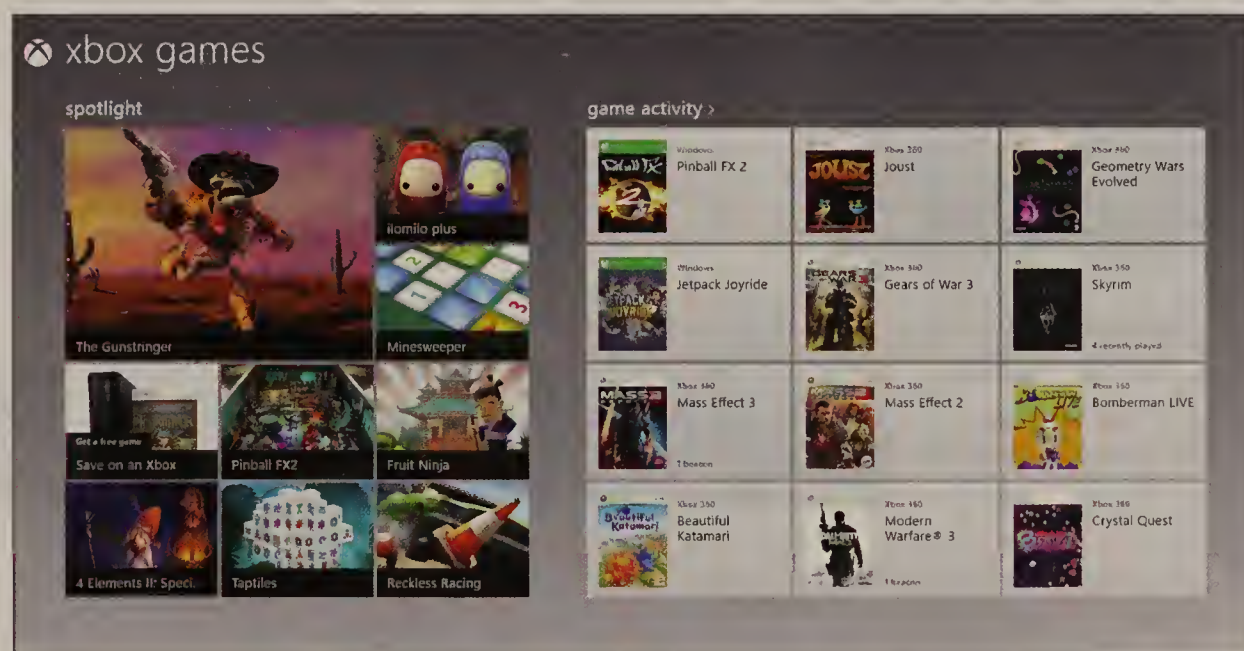
Play to Xbox

One eye-catching benefit of the new friendship between Windows 8 and the Xbox 360 is the ability to push content from your computer to your console in two different ways (with similar names). The first and more universal is the “Play to Xbox” option.

Assuming that you correctly set up your Xbox 360 and

in the options bar at the bottom of the screen. Doing so opens the charm bar, where you can select your Xbox 360 console (or any other certified “Play to” DLNA receiver).

However, I've run across the occasional finicky response when trying to get Music or Video to recognize that my Xbox 360 exists. Even worse, Music and Video are absolutely horrible apps for multimedia unless you're on a touchscreen device. Instead, I find it easier and faster to click on a movie or a song in Windows 8's File Explorer, open the Play context menu within the Ribbon-style File



The main screen of the Games app in Windows 8 shows your recent console activity.

ing “second-screen” capabilities that display dynamic maps, stats, song queues, and more. In effect, you employ the small screen of your Windows 8 device to affect something on the big screen of your Xbox-connected TV. Lackluster title support hurts

that Windows 8 sees it as a functional online device, you'll get the option to stream media from your PC to your console. One way to do this is by opening your Windows 8 Music or Video app, right-clicking a file to stream, and selecting *Play To*

menu, and select the *Play To* option to stream that media file directly to the Xbox 360.

The media file should start on your console right away. “Play to Xbox” functions as any other streaming-media setup does—the game console and your Windows 8 >>

device must be up, running, and connected to your network to stream your music or movies successfully.

Play on Xbox

The second streaming option in Windows 8, "Play on Xbox," is more interesting. Rather than streaming media from a Windows 8 device to your game console, "Play on Xbox" employs the cloud backbone powering Microsoft's media offerings to stream music, movies, and TV shows from the Internet to your console. As your chosen file is playing

push of a button, and when you change devices, videos pick up right where you left off on the other device.

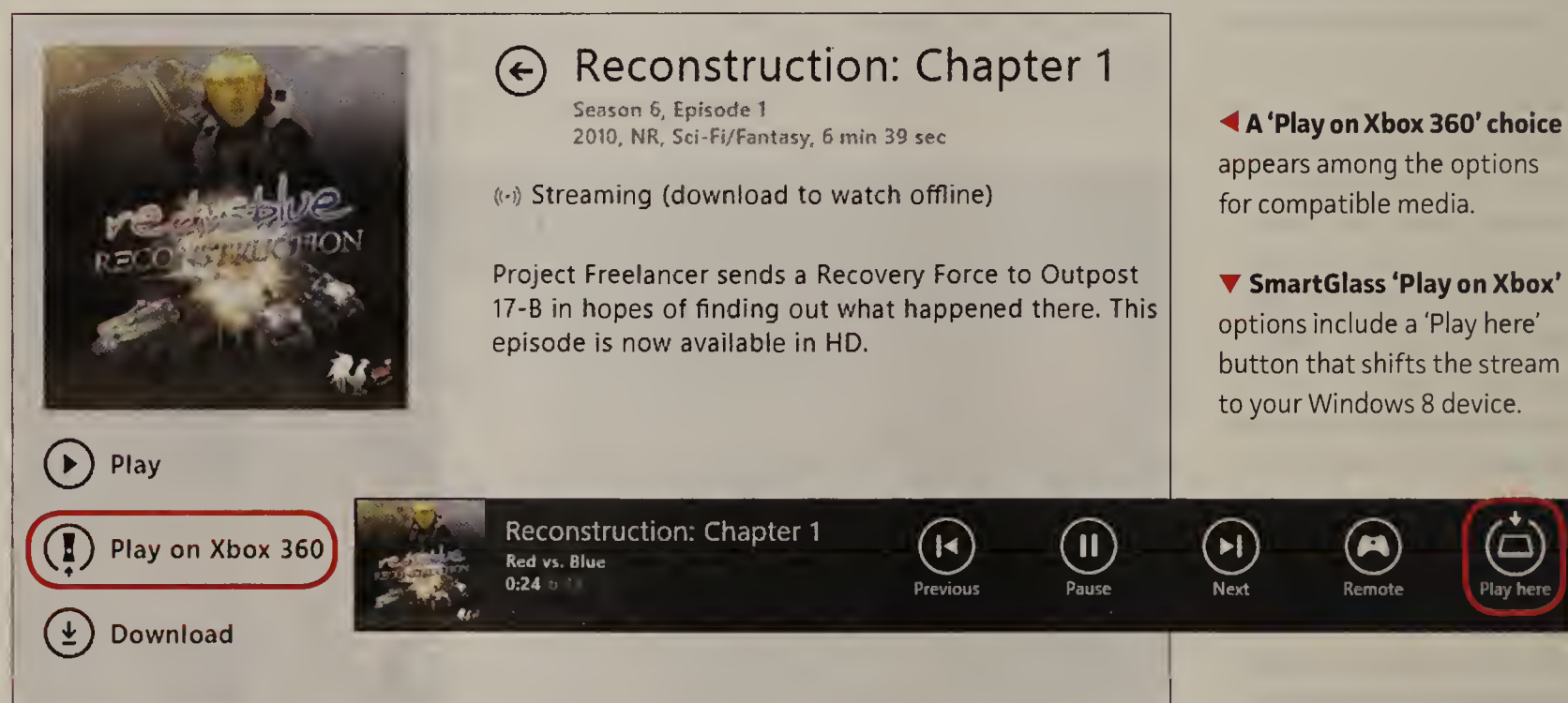
Unfortunately, "Play on Xbox" needs a lot of extra software to work properly, and some of those extras are expensive. Most crucially, only the content that you've bought in Microsoft's Music and Video apps can take advantage of "Play on Xbox." Any local files that you've acquired via, say, iTunes or ripped from physical media have to go through the more limited "Play to Xbox" instead.

Game Over, Man, Game Over

Even setting aside those disappointing limitations, not all is sunny in Windows 8 and Xbox 360 land. Notably missing from these two platforms' growing integration is any way for gamers on Windows 8 to message their friends on Xbox Live directly through the operating system. (Games for Windows Live doesn't count.) Additionally, those people who are looking to stream content from their Windows 8 systems to their game consoles

to try: streaming games from a console to a PC or tablet for some keyboard-and-mouse (or finger-tapping) play.

The Windows 8-Xbox pairing doesn't work flawlessly across the board, either. As mentioned, I've been having a heck of a time trying to get my OS to recognize that my turned-on Xbox 360 exists. I suspect this problem might be the result of my desktop PC's being connected to my router via ethernet, whereas my Xbox 360 is hooked up wirelessly—somehow, the Wi-Fi connection might be a



← Reconstruction: Chapter 1
Season 6, Episode 1
2010, NR, Sci-Fi/Fantasy, 6 min 39 sec

Streaming (download to watch offline)

Project Freelancer sends a Recovery Force to Outpost 17-B in hopes of finding out what happened there. This episode is now available in HD.

Play

Play on Xbox 360

Download

Reconstruction: Chapter 1
Red vs. Blue
0:24

Previous Pause Next Remote Play here

▲ A 'Play on Xbox 360' choice appears among the options for compatible media.

▼ SmartGlass 'Play on Xbox' options include a 'Play here' button that shifts the stream to your Windows 8 device.

on the boob tube, SmartGlass automatically pops up on your Windows PC or tablet and offers the app's virtual controls and—if available—second-screen information and options for the title. It's all pretty seamless. Even better, you can use SmartGlass to swap the stream between your console and your Windows 8 PC or tablet at the

As if that weren't enough of a barrier, you'll also need an Xbox Live Gold subscription and an Xbox Music Pass subscription if you hope to use "Play on Xbox" for enjoying tunes on your console.

The abundance of costly roadblocks is a real shame, as "Play on Xbox" is one of the standout features of Windows 8's console integration.

still have to put up with the Xbox 360's restrictions on supported video codecs and encoding types.

In other words, you might not be able to stream all of your videos, even if you use Microsoft's offered techniques. And, of course, users currently have no way to flip the streaming equation in the one way gamers might want

deal breaker when it comes to my desktop PC's ability to correctly identify the console 100 percent of the time. My editor has a similar setup that works just fine, however, so your mileage may vary.

In the end, the marriage of Windows 8 and the Xbox 360 isn't perfect, but it's highly promising. And when it works, it's a blast.—David Murphy

ANSWER LINE

Add Tunes to Your Music Collection for Free

Q How can I acquire songs for an iPod without spending money?—*Janisum*



LINCOLN SPECTOR

YOU CAN DOWNLOAD a lot of free music online, but you probably won't find the particular song or album you want—at least not legally. You're limited to recordings that have fallen into the public domain or ones that their owners have made available for free. That's

understandable. Songwriters, singers, musicians, and recording engineers expect to be paid for their work. (I'm focusing on legal options, here. After all, I'm financially dependent on copyright law. I'm also married to a musician.)

But first, a suggestion: Stick to MP3 files. They come without the restrictions of digital rights management, and they're universally supported; I know of no device that can play digital music files that can't play MP3s.

For downloads, check out the audio available at the Internet Archive (archive.org). One subset of that collection, the Live Music Archive, contains concert recordings from over

4000 artists, most of them obscure. But you'll also find an immense selection of Grateful Dead concerts. Not all of these are downloadable (some are just for streaming), but enough are to keep any Deadhead happy.

The archive also hosts thousands of Netlabels—small, independent record labels existing only on the Internet. What's more, you can search the entire audio collection for favorite performers. You'll find a few songs by big names, from Louis Armstrong to Lady Gaga.

Another site worth checking out is Last.fm, where you can browse through genres and select "radio" stations. And try Jamendo (jamendo.com), which offers music with Creative Commons licenses—an alternative to standard copyrights that allows for free distribution.

The major online music retailers offer free music for marketing purposes. Amazon's selection includes mostly samplers, but you'll probably find something you like.

If you have CDs, you can convert them to MP3 in Windows Media Player. Select *Tools* ▶ *Options*, click the *Rip Music* tab, pull down the *Format* menu, and select *MP3*. Set 'Audio quality' to either *256 Kbps* or *320 Kbps*.

Can a BSoD Hurt Your Computer?

No—the whole point of a Blue Screen of Death is to protect your hardware. When Windows senses that something could cause real harm, it stops everything, result-

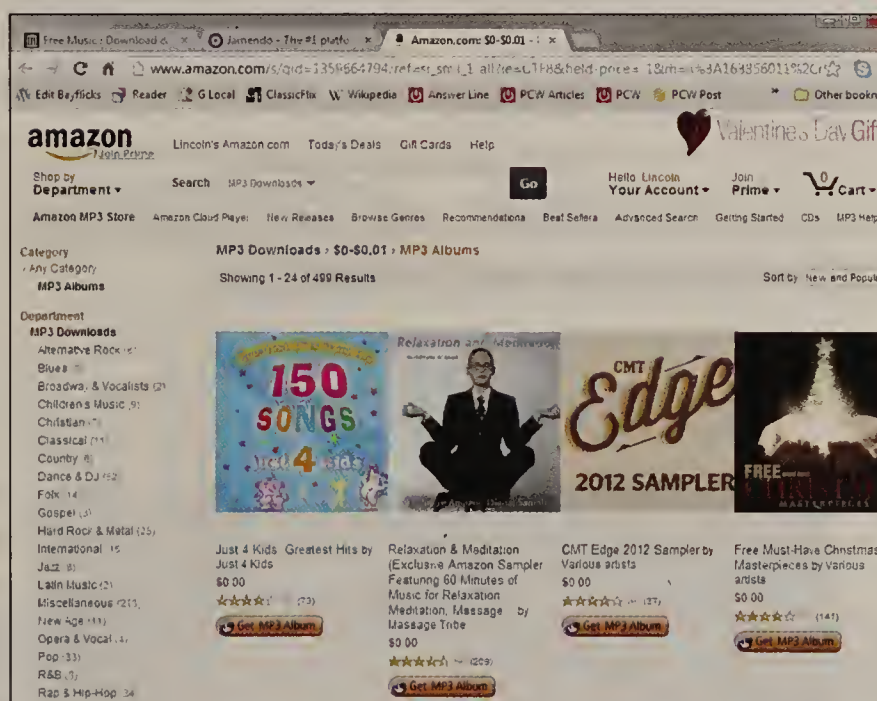
ing in the infamous BSoD. (Officially, Microsoft calls these screens "stop errors.")

A BSoD can be a symptom of a hardware problem, though. In that case, it might look as if the error condition itself caused the problem.

Although a BSoD won't damage your hardware, it can ruin your day. You're busy working or playing, and suddenly everything stops. You have to reboot the system, and then reload your programs and files. And you

may have to do some of your work over: When Windows crashes, it takes everything in RAM with it.

A single, rare BSoD is nothing to worry about. If they start happening frequently, however, you have a problem. Write down and later do a Google search on the more useful, specific information on the screen. Also try BlueScreenView (go.pcworld.com/bluescreen), a free, portable program that can analyze your recent crashes. For additional guidance, see go.pcworld.com/bsod.



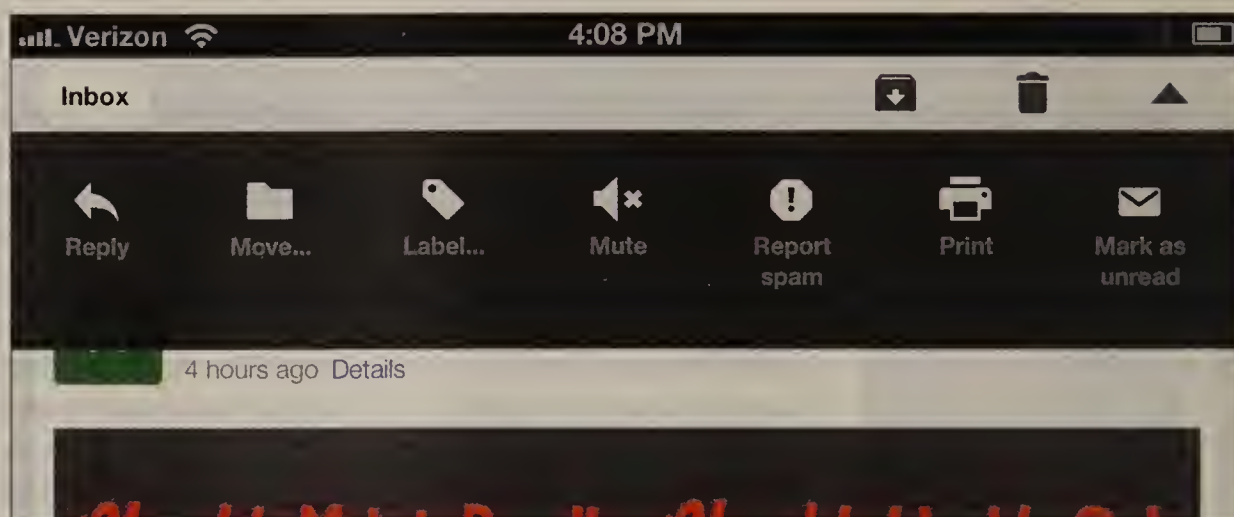
Amazon's downloadable music selection includes free samplers.

Mute Annoying Email Threads in Gmail

THE 'REPLY ALL' button is a fickle mistress. It's useful for communicating with a group, but it is easily and frequently abused, filling your inbox with a chain of inane responses that you just don't need to see. No matter how many times you delete these messages from your inbox, the next message in the chain will make everything come flashing back.

For Gmail users, there's a quick response that doesn't require you to mark the messages as spam or threaten the emailers with bodily harm. Gmail makes it easy to mute specific email threads and keep them out of your inbox.

If you're accessing the Web version of Gmail, simply locate the offending email message or thread, click the *More* button on the top tool-



In addition to muting messages in the Web interface, you can do so in the Gmail app on iOS and Android.

bar, and select *Mute* from the drop-down menu. The email will disappear from your inbox, and further replies to that thread will be hidden.

The muted item can pop back into your mailbox, but only if someone in the thread emails you directly. And don't worry, muted threads aren't actually gone: If you learn

that a boring thread became interesting later on, you can still read it by going to the All Mail section of Gmail.

Silencing annoying email on your Android device or iPhone is equally easy. In the Android Gmail app, just tap the email you want hidden, and then the menu button. (This is either a physical but-

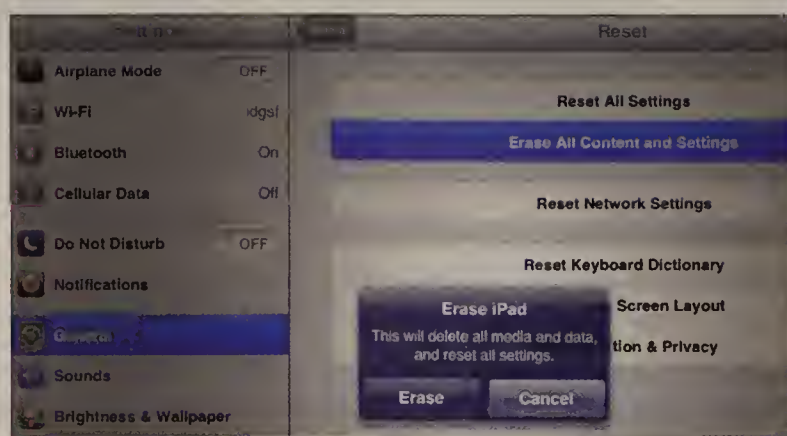
ton on your phone or an icon with three dots stacked vertically.) In the resulting panel, you'll see an option to mute the message and send it packing. On the iPhone, you can easily find the mute option by tapping the triangle in the toolbar that shows up when you're viewing an email.—Armando Rodriguez

EASY HACKS: BACK UP, WIPE, AND RESTORE YOUR IPAD

IF YOU'RE PLANNING to sell or give away your iPad, it's essential to erase your personal data first. Or, if the device is running sluggishly, sometimes backing up your data, erasing it, and restoring the iPad can improve performance.

To perform a wipe, first make sure that you have the most current version of iTunes. Then, plug your iPad into your computer. On the iPad, tap *Back Up Now*. The procedure may take some time depending on how many files and apps you have.

After the backup, unplug the iPad and go to the settings



When you try to erase your iPad, you'll see a confirmation prompt.

menu (gear icon). Tap *General* and scroll to *Reset*. Tap it and select *Erase All Content and Settings*. The iPad will prompt twice to continue. Since you have backed up your data, initiate the erase. Again, this step may take some time.

The wiped iPad will prompt you for basic information, and then it will ask whether to set up the iPad as new or to restore data. If you're keeping

the iPad, choose *Restore from iTunes Backup*.

Plug your iPad into your computer. In iTunes a "Welcome to Your New iPad" screen should appear. Select *Restore from this backup* to bring your data back to your device.—Nick Barber

MacMania 16



Rhone River, November 29th – December 6th, 2013

InsightCruises.com/Mac-16

IN NOVEMBER, THE TOURISTS

are gone from Provence. The harvest's been gathered. The south of France exhales, resuming her essential rhythms, manifesting her ancient uniqueness, effortlessly. It's the perfect time and place to relax, recharge, and revel in the latest in all things Apple on a Rhone River cruise from November 29 to December 6, 2013.

Join Lex Friedman, Joe Kissel, and Sal Soghoian to learn to set up your own cloud, use Mac OS to offload your brain, tap iOS devices to the max, e-publish easily, and harness your data. Plus, dig in to the Rhone Valley's unparalleled Roman ruins and plumb Roman engineering with noted archaeologist Lynne Lancaster.



Immerse yourself in the South of France. Share Impressionistic vistas and savor the moment with a friend, birdwatch, experience local cuisine, and capture images and memories.

Experience river cruising's panoramic charms on MacMania 16 on AmaWaterway's AmaDagio, sailing from Lyon to Arles, France. The light, colors, and flavors of France await. Make your reservation at <http://www.InsightCruises.com/Mac-16>, email us at Concierge@InsightCruises.com, or call us at 650-787-5665.

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The cruise fares start at \$2,799 for a Category E. French Balcony cabins start at \$3,378. A Junior Suite is available for \$4,498. Additional per-person fees include government taxes and fees (\$147) and gratuities are €15 per day. Program subject to change.

For a full listing of seminars visit InsightCruises.com/Mac16-seminars

SEMINARS

The conference fee is \$1,395 and includes all 16 seminars below. Classes only take place when we're cruising, between 8:30am and 7:30pm.

SAL SOGHOIAN

- The 25 Things You Need to Know About OS X
- Introduction to OS X Automation
- Instant E-Publishing
- Make Your Own Cloud

LEX FRIEDMAN

- Mac OS: Offloading Your Brain
- Drive Your Mac From the Keyboard
- Oh, the Things You Can Make
- Improve Your iOS Efficiency

JOE KISSELL

- Stay Safe Out There
- The Joy of (Plain) Text
- Living on a Desert Island with Only iOS
- 50 Things You Didn't Know Your iOS Device Can Do

LYNNE LANCASTER, PH.D.

- Intro to Culture & Technology in Gaul
- Fire-Based Technologies in Gaul
- Building an Amphitheater
- Aqueducts, Baths, and Water Mills



Insider's tour of Cern

Pre-cruise: November 28, 2013—From the tiniest constituents of matter to the immensity of the cosmos, discover the wonders of science and technology at CERN. Join Bright Horizons for a private pre-cruise, custom, full-day tour of this iconic facility. (If the LHC is still undergoing its scheduled maintenance it is likely we will go into the LHC Tunnel.)

Whether you lean toward concept or application there's much to pique your curiosity. Discover the excitement of fundamental research and get a behind-the-scenes, insider's look at the world's largest particle physics laboratory.

Our full day will be led one of our speakers (TBA) and by other CERN physicists. We'll have an orientation; visit an experiment; get a sense of the mechanics of the large hadron collider (LHC); if at all possible, go down inside the LHC tunnel (picture above); make a refueling stop for lunch; and have time to peruse the grounds and exhibits on the history of CERN and the nature of its work. And if you're so inclined, the CERN gift shop.

The price is \$899 per person (based on double occupancy). This trip is limited to 50 people. NOTE: CERN charges no entrance fee to visitors.

HASSLE-FREE PC

Uninstall Unwanted Apps in Windows 8



RICK BROIDA

IF YOU'RE NEW to Windows 8, you probably find certain aspects of it confusing.

For example, if you're using the modern Start screen, you've undoubtedly installed some apps. But how do you *remove* an app? It's not immediately obvious. If you pull up the charm bar and

tap Settings, you'll find no help. If you tap the 'Change PC settings' link, you'll get no uninstaller there either.

Well, there's always good old Control Panel, right? Wrong: When you get there, you'll see that apps aren't listed. Guess they're not "programs" in the traditional sense.

As it turns out, if you're operating Windows 8 with a mouse, it's a snap to uninstall an app: Just mouse over its tile, right-click, and choose *Uninstall* from the options toolbar at the bottom of the screen.

If you're using a touchscreen, you have no right-click option. In this case, the process requires a little dance: Tap and hold a tile, drag it down slightly, and release it. You'll see a checkmark on the tile, as well as the toolbar down below. Tap *Uninstall* to remove the app.

In fact, if you've ever tried arranging tiles by tapping and dragging, you know that it doesn't work the "normal" way: You have to do that little down-drag before moving a tile. It's not hard, it's just unintuitive.

Add YouTube to Your Roku Box

The newly released Roku 3 set-top box comes complete with a faster processor, dual-band Wi-Fi, and a headphone jack in the remote. Still missing: YouTube.

It's borderline crazy that a box capable of streaming every video service you've ever heard of—and plenty you haven't—doesn't support YouTube. You can get around that, though, by installing the VideoBuzz channel, one of the few functional YouTube players for Roku boxes.

Click through to the channel page, and look for the Channel Add link near the top. Click *VideoBuzz*, then *Yes, Add Channel*. (You'll need to be signed in to your Roku

Plus: Enjoy YouTube on a Roku box, and add recovery info to your Android phone.

account on the Web.) On your Roku box, you should find the newly added VideoBuzz. In my quick tests with an older Roku, VideoBuzz worked like a champ.

Improve Your Chances of Recovering Your Phone

Password-protecting your smartphone makes sense, as it prevents unauthorized users from accessing your data.

But it can also work against you. Suppose you lose your phone: A Good Samaritan who finds it and wants to return it won't be able to do the necessary detective work. Fortunately, Android 4.0 supports lock-screen con-

Although Roku boxes don't officially support YouTube, you can add it through VideoBuzz.



tact information, which will display a message of your choosing even on a passcode-protected device.

1. On your Android phone, head to *Settings*, then look for an entry called Lock Screen. (I found this under the Personal section on my Samsung Galaxy S III; on your phone it might be under Security or somewhere similar.)

2. Tap *Lock Screen* ▶ *Owner Information*.

3. In the field, enter a message that might help someone return the phone to you—your email address or office phone number, for example. You could set up a Google Voice number solely for emergency recovery purposes, in case you don't want your personal number visible on your lock screen.

4. Make sure that *Show owner info on lock screen* is checked, and then tap *OK*. ●

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Five Things

YOU MUST KNOW ABOUT...

Google Glass

Having improved the way we view the Internet, Google is now trying to improve how we view the world around us, with Google Glass. The headset should hit stores by the end of the year, but prototypes are already cropping up in the wild.



1

Versatile Components

Running Android 4.0.4 Ice Cream Sandwich and packing 12GB of usable flash storage (16GB total), the Google Glass Explorer charges via Micro-USB and has a microphone, Bluetooth and 802.11b/g radios, a camera that can take 5-megapixel photos or 720p video, and a bone-conduction transducer that sends audio to your inner ear. If your phone runs Ice Cream Sandwich or later, you can download the MyGlass app and pair it to display texts, directions, and more on your Glass headset.

2

Affordable Hardware

Although the current Google Glass Explorer prototypes cost developers and select tech celebrities \$1500 apiece, the hardware inside the headset doesn't cost nearly that much to manufacture. The final consumer version of Glass will likely be much cheaper—Google claims that the consumer headset will cost about as much as an average smartphone, which means that you can expect to pay between \$200 and \$600 for a Glass headset when the product finally reaches the market.

3

Abolished Ads

If you are concerned about ads cluttering your vision, take heart: Google is too. It has written a prohibition against ads and fees into the Mirror API that developers are using to write Google Glass apps. That means developers can't show ads, use your data or sell it to third parties for advertising purposes, or even charge a fee for their apps. The prohibitions will probably change when the final version of Glass goes on sale, but they're a promising sign that Google is treading carefully.

4

Touch Interaction

The plastic housing you see on the right side of the Glass headset isn't just a case. It's also a touch-sensitive pad that you tap to navigate the interface. You can swipe your finger along the touchpad to move through your Glass timeline, which consists of a series of informational cards. Each card—such as the weather card or the calendar card—has a specific purpose. Swiping down puts Glass into standby, dimming the screen to conserve battery life and removing Glass from your view.

5

Limited Voice

Google Glass also supports voice control. The basic Glass API comes programmed to recognize a short list of commands, such as "Okay, Glass, take a picture" and "Okay, Glass, record a video," but it works only when you say the exact phrase; otherwise, Glass won't listen. It may seem like a limitation, but restricting voice input to specific phrases that start with "Okay, Glass" minimizes your chances of accidentally triggering Glass when you're trying to have a conversation with someone. ●



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